



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	: Horst Heckmann	Group Art Unit: 3616 Examiner: E. Culbreth
Appln. No.	: 10/056,898	
Filed	: January 25, 2002	
Title	: A VEHICLE WITH FRAME SUPPORT	
Docket No.	: B87.312-26	

EXPRESS MAIL COVER SHEET

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Sir:

The following papers are being transmitted via **EXPRESS MAIL** to the U.S. Patent and Trademark Office on the date shown below:

1. Postcard
2. Brief for Appellant (in triplicate) comprising:
 - Brief (15 pages)
 - Appendix A
 - Appendix B
 - Appendix C
3. Fee Transmittal Sheet
4. Check in the amount of \$320.00

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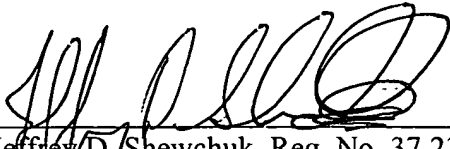
Respectfully submitted,

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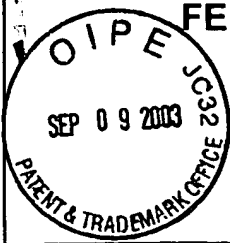
September 9, 2003

By


Jeffrey D. Shewchuk, Reg. No. 37,235
THE KINNEY & LANGE BUILDING
312 South Third Street
Minneapolis, MN 55415-1002
Telephone: (612) 339-1863
Fax: (612) 339-6580

9-10-03

AF / GP 3616



FEE TRANSMITTAL

Complete if Known

Application No. 10/056,898
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 First Named Inventor Horst Heckmann
 Group Art Unit 3616
 Examiner Name E. Culbreth
 Atty. Docket Number B87.312-26

Total Amount of Payment \$320.00

METHOD OF PAYMENT (Check One)

1. ☒ The Commissioner is hereby authorized to charge any additional fee required under 37 C.F.R. 1.16 and 1.17 and credit any over payments to Deposit Account No. 11-0982.
 Deposit Account Name: Kinney & Lange, P.A. A duplicate copy of this communication is enclosed

2. ☒ Check Enclosed

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description
1001	750	2001	375	<input type="checkbox"/> Utility Filing Fee
1006	330	2006	165	<input type="checkbox"/> Design Filing Fee
1004	750	2004	375	<input type="checkbox"/> Reissue Filing Fee
1005	160	2005	80	<input type="checkbox"/> Prov. Filing Fee

Subtotal (1) \$

2. EXTRA CLAIM FEES

	Number Claims	Prior**	Extra	Fee from Below	Fee Paid
Total	*	-	*	=	*
Indep.	*	-	*	=	*
Multiple Dependent Claims				*	*

**Insert 3 and 20, or number previously paid if greater; Reissue see below

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple Dependent Claim
1204	84	2204	42	Reissue Independent Claims Over Original Patent
1205	18	2205	9	Reissue claims in excess of 20 and over original patent

Subtotal (2) \$

FEE CALCULATION (Continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee paid
1051	130	2051	65	Surcharge - Late filing fee or oath	*
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	*
1053	130	1053	130	Non-English specification	*
1612	2,520	1812	2,520	For Filing a Request for Reexamination	*
1251	110	2251	55	Extension for reply within first month	*
1252	410	2252	205	Extension for reply within second month	*
1253	930	2253	465	Extension for reply within third month	*
1254	1,450	2254	725	Extension for reply within fourth month	*
1255	1,970	2255	985	Extension for reply within fifth month	*
1402	320	2402	160	Filing a brief in support of an appeal	320
1403	280	2403	140	Request for oral hearing	*
1814	110	2814	55	Terminal Disclaimer Fee	*
1452	110	2452	55	Petition to revive - unavoidable	*
1453	1,300	2453	650	Petition to revive - unintentional	*
1501	1,300	2501	650	Utility/Reissue issue fee	*
1502	470	2502	235	Design issue fee	*
1460	130	1460	130	Petitions to the Commissioner	*
1807	50	1807	50	Petitions related to provisional applications	*
1806	180	1806	180	Submission of Information Disclosure Statement	*
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	*
1801	750	2801	375	Request for Continued Examination (RCE)	*

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Signature Jeffrey D. Shewchuk

Reg. No. 37,235

Date September 9, 2003

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Examiner: E. Culbreth

#14
9-16-03

BRIEF FOR APPELLANT

Mail Stop Appeal Brief-Patents
Commissioner for Patents
Alexandria, VA 22313-1450

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GROUP 360

Sir:

This is an appeal from a final Office Action dated March 10, 2003 in which claims 1-5 and 7-10 were finally rejected.

Real Party In Interest

The real party in interest in this appeal is Schwing GmbH, a corporation organized and existing under the laws of Germany, and having offices at Herstr. 9-27, D-44653 Herne, Germany.

Related Appeals and Interferences

Applicants know of no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of the Claims

I. Total number of claims in the application

Claims in the application are: 1-10, inclusive.

II. Status of all the claims

A.	Claims canceled:	6
B.	Claims withdrawn but not canceled:	None
C.	Claims pending:	1-5 and 7-10

- D. Claims allowed: None
- E. Claims rejected: 1-5 and 7-10
- F. Claims objected to, indicated as being allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims: None

III. Claims on appeal

- A. The claims on appeal are: 1-5 and 7-10.

Status of Amendments

An Amendment After Final was filed on July 10, 2003, and it was indicated by an Advisory Action mailed July 23, 2003 that the Amendment will be entered for purposes of the appeal. No further Amendment After Final was filed.

Summary of Invention

The present invention is a vehicle 1 for delivering concrete to an elevated location.(Page 1, line 3). The vehicle 1 has a concrete pump 11 having a feeding hopper 12, and a superstructure 2 with at least one swiveling extendable mast 3 on a slewing gear 4. (Page 3, lines 31-32; Figure 1). A frame support 70 stabilizes the vehicle 1 against tilting when the swiveling extendable mast 3 is in an extended mast position. The frame support 70 includes two "common carriers" 27, 28, one on each of the left and right sides of the concrete pump vehicle 1, which form the outer sleeve stationary telescope sections 23, 24, 25, 26 of a telescoping support structure. (Page 4, lines 22-24; Figure 1). Each common carrier 27, 28 is disposed at least partly in an arc tangentially to a longitudinal direction of the vehicle 1, extending in each case inward substantially as far as a middle of the vehicle 1 and then outward to the same long side. (Page 4, lines 14-19; Figure 1). Each stationary telescope 23, 24, 25, 26 cooperates with one movable telescope 14, 15, 17, 16, respectively, to allow the movable telescope to extend outward from the corresponding long side of the vehicle 1. (Figure 1). The common carrier 27, 28 disposes the front and back movable

telescopes 15, 16, 14, 17 and the cooperating stationary telescopes 24, 26, 23, 25 one behind the other such that the movable telescopes emerge from associated front and back ends of the common carrier 27, 28. (Page 4, lines 22-24). For instance, on the left side of the vehicle 1, common carrier 27 provides front stationary telescope 24 and back stationary telescope 23 one behind the other, such that front movable telescope 15 and back movable telescope 14 are positioned one behind the other, and such that front movable telescope 15 emerges from the front end of the common carrier 27, and back movable telescope 14 emerges from the back end of the common carrier 27. (Page 4, lines 24-26; Figure 1).

As defined by claims 4 and 8-10, the arcs of the stationary telescopes have a common curvature according to one radius. (Figure 1). As defined by claim 5, the movable telescopes of at least one long side of the vehicle have different curvatures, wherein R_v is different than R_H . (Figure 3).

Issues

A. Whether Japanese Patent 5-178171 ("Japanese '171") is analogous prior art to the invention, such that considering combining Japanese '171 with Heckmann, U.S. Pat. No. 5,638,967 ("Heckmann '967") under 35 U.S.C. § 103 is proper.

B. Whether there is a suggestion to combine Japanese '171 with Heckmann '967 under 35 U.S.C. § 103.

C. Whether the combination of Japanese '171 with Heckmann 967 results in the claimed invention, rendering the invention obvious under 35 U.S.C. § 103.

D. Whether Heckmann '967 discloses or suggests different curvatures, and renders claim 5 unpatentable under 35 U.S.C. § 103.

Grouping of Claims

The following groupings of claims are made solely in the interest of consolidating issues and expediting this Appeal. No grouping of claims is intended to be nor should be interpreted as being any form of admission or a statement as to the scope or obviousness of any limitations.

- I. Claims 1-4 and 7-10 stand or fall alone
- II. Claim 5 stands or falls alone

Argument

I. JAPANESE '171 IS NOT WITHIN APPLICANTS' FIELD OF ENDEAVOR NOR IS IT REASONABLY PERTINENT TO APPLICANTS' PARTICULAR PROBLEM, AND THUS JAPANESE '171 IS NOT ANALOGOUS TO THE PRESENT INVENTION AND CANNOT BE USED AS PRIOR ART.

Claims 1-5 and 7-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 5,638,967 to Heckmann ("Heckmann '967") in view of Japanese Patent 5-178171 ("Japanese '171"). However, a condition predicate to making a determination as to obviousness based on a combination of references is that all the asserted references are pertinent prior art to the invention. While Heckmann '967 is an earlier patent issued to Applicant and is clearly analogous art, Japanese '171 is outside the scope of analogous prior art, and thus is not a proper reference.

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

In re Clay, 966 F.2d 656, 23 U.S.P.Q.2d 1058, 1060 (Fed. Cir. 1992).

In the instant case, Applicant's field of endeavor is vehicles for delivering concrete to an elevated location. Japanese '171, though related to vehicles, has nothing to do with delivering

concrete to an elevated location. See In re Clay, 966 F.2d 656, 23 U.S.P.Q.2d 1058, 1060 (Fed. Cir. 1992) ("Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry."). Similar to this statement in In re Clay, Japanese '171 cannot be considered to be within Applicant's field of endeavor merely because both relate to vehicles. A worker skilled in the art of designing vehicles for delivering concrete to an elevated location would not look to all references which relate to other types of vehicles.

The problem with which the inventor is involved in the present application is stability, and particularly stability of the vehicle when the extendable mast is raised and is delivering concrete. The vehicle of the present invention is designed to deliver concrete to an elevated location using an extendable mast. When performing its primary function of delivering concrete to an elevated location, the vehicle will generally be stationary. To support the extendable mast, which bears a high mast with a heavy load, the vehicle must be very heavy and well supported. The stationary and movable telescopes provide frame support when the mast is extended. The weight of the vehicle due to the weight of the superstructure is critical to stability (see p. 2, line 14). Stability is a problem in this type of vehicle due to the torque caused by the moment arm of a high mast with a heavy load. The frame support provided by the stationary and movable telescopes does not raise the vehicle off the ground per se, but rather makes the vehicle less likely to tip.

Japanese '171 is directed to a very different problem than that of the subject application and Heckmann '967. The Japanese '171 front-loader vehicle is low to the ground and has no substantial possibility of tipping during use. In contrast to the concrete delivery vehicle of the present invention, which is generally stationary when performing its primary function of delivering concrete to an elevated location, the Japanese '171 front-loader is generally mobile when performing its primary function of carrying dirt or other matter in its bucket 3. Thus, the telescopes 11 of Japanese '171 are retracted when the front loader is performing its primary function. The purpose of the telescopes 11 in Japanese '171 is not to laterally support or stabilize the vehicle during extension of a mast, and is completely unrelated to the possibility of tipping of the vehicle. The purpose of the Japanese telescopes is to provide swingable support members which are able to

lift and suspend the vehicle body in a balanced, controlled and non-usable position above the ground. The Japanese vehicle is suspended above the ground such as to permit inspection, cleaning or mechanical work on the underside of the vehicle. While the Japanese vehicle is suspended above the ground, the vehicle is not operable. While suspended above the ground, the Japanese vehicle has only three contact supports and is actually much more likely to tip than when not suspended. The swingable support members are somewhat slidable in the width direction, but the purpose of this width direction movement is adjustability (see last line of the abstract), not improved stability against tilting through a wider span of the telescopes. This can also be seen in the drawings of Japanese '171 showing a minimum span of the telescopes.

A worker skilled in the art, interested in preventing tilting of a vehicle during use of a mast, would have no motivation to turn to the three-legged suspension mechanism of Japanese '171 which renders the Japanese '171 vehicle more likely to tip. The problem faced in Japanese '171 - to allow flexibility in placement of supports when the vehicle is lifted from the ground to permit working on the underside of the vehicle - is completely different from the problem faced in the present invention and Heckmann '967. The fact that Japanese '171 shows a telescoping support in suspending a vehicle above the ground by three contact supports is not analogous to stabilizing a masted vehicle against tilting.

Japanese '171 is not within the field of vehicles for delivering concrete to an elevated location, nor is it related to the particular problem faced by the invention, that of stabilizing the vehicle during mast extension. Being outside the scope of analogous prior art, Japanese '171 would not be known to "a worker having ordinary skill in the art to which said subject matter pertains" as required by 35 U.S.C. § 103. As Japanese '171 is not analogous prior art to Applicants' invention, the rejection of claim groups I and II (claim 1, and claims 2-5 and 7-10 dependent therefrom) based upon combining Heckmann '967 with Japanese '171 is overcome and must be reversed.

II. THERE IS NO SUGGESTION TO COMBINE JAPANESE '171 WITH HECKMANN '967, AND CLAIM GROUPS I AND II (CLAIM 1, AND CLAIMS 2-5 AND 7-10 DEPENDENT THEREFROM) ARE PATENTABLE OVER HECKMANN '967 IN COMBINATION WITH JAPANESE '171.

The object in Heckmann '967 was to optimize the length of the telescopes considering the necessity to house them within the vehicle profile (see Col. 1, lines 44-49). This goal is achieved by the different embodiments described in the specification (see Col. 2, lines 16-26, and Col. 3, lines 6-8). However, the arrangement of the four guides in the vehicle in Heckmann '967 is expensive and space consuming, and therefore only useful in large vehicles.

The object of the present invention was to find a cheaper, less space-consuming and simpler guide arrangement for housing the movable telescopes than that described in Heckmann '967, but still optimized in the span of the telescopes. The optimization of the span of the telescopes provides stability against tilting of a vehicle with a superstructure including a swiveling mast and a slewing gear. In the present application, only one guide (or common carrier 27,28) is disposed on each side of the vehicle, and the placement of two telescopes end to end in each of the guides provides a less expensive, more space efficient, and simpler solution. The present invention involves the discovery that the placement of two telescopes end to end can be arranged to provide sufficient extension and lateral support to achieve balance requirements of smaller trucks with smaller masts. In the present invention, not only a large span of the telescopes is important, but also cost and space considerations play a role.

The final Office Action admits that Heckmann '967 "does not teach the common carrier disposing the front and back movable telescopes and the cooperating stationary telescopes one behind the other." Final Office Action, pg. 3. In Heckmann '967, there are separate guides provided for each of the four telescopes. In other words, two guides had to be disposed on each side of the vehicle.

Japanese '171 discloses a tri-pod support arrangement for suspending a front loader above the ground such as to permit inspection, cleaning or mechanical work on the underside of the vehicle. A single front support 11, 13 is positioned at the longitudinal axis of the front loader, just

behind the bucket 3 and toward the front of the front loader. Two supports 13 are provided toward the rear of the front loader. The two supports 13 are swingable about a lateral axis, such that the front loader can be driven up into a position in which the support members 13 lift the front loader body. The two rear supports 13 support the rear of the front loader through telescopes 11. The telescopes 11 arranged side to side in a common carrier 12. The lateral position of the two rear supports 13 is "adjustable in the width direction" as shown in FIG. 3. While the Japanese vehicle is suspended above the ground, the vehicle is not operable. While suspended above the ground, the Japanese vehicle has only three contact supports (See FIGS. 1 and 2 of Japanese '171) and is actually much more likely to tip than when not suspended.

Claims 1-5 and 7-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Heckmann '967 in view of Japanese '171. The Examiner indicated that "Japanese '171 discloses a carrier 12 that stores beams 11 with their ends adjacent so that the free ends with support member 13 emerge from the carrier at its ends." However, in this Japanese reference, only the rear two supports are moveable, and these rear supports move only in a transverse direction. The guides are not arc shaped, and the telescopes do not extend along the longitudinal axis of the vehicle. The tri-pod, drive-up structure disclosed in Japanese '171 is not suitable for stabilizing a vehicle with a concrete pump and a mast.

To establish a *prima facie* case of obviousness, three criteria must be met:

First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success.... The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

See MPEP §2142 and 2143. To establish a *prima facie* case of obviousness, there must be a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. To properly reject a claim, "There must be some reason, suggestion or motivation found in the prior art

whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself." In re Oetiker, 977 F.2d 1443, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). Moreover, when the motivation to combine the teachings of the references is not immediately apparent, the Examiner must explain why the combination of teachings is proper. See Ex parte Skinner, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986).

A worker of ordinary skill in the art would not look to Japanese '171 to modify the invention of Heckmann '967. There is no suggestion in either reference to do so. The instability presented by the three-legged lift-up device taught by Japanese '171 is contrary to the stabilizing telescopes of the present invention. The purpose in Japanese '171 is not to laterally support the vehicle during extension of a mast. In Japanese '171, there is insufficient span to support a vehicle with a concrete pump having a mast producing a torque. In addition, lifting from the ground a vehicle with a concrete pump, which is already at or near its weight limit, is wholly unnecessary and undesirable, and doing so with only three support legs would be disastrous.

In Japanese '171, the swingable support members are somewhat slidable in the width direction, but the purpose of this width direction movement is adjustability (see last line of the abstract), not improved stability against tilting through a wider span of the telescopes. This can also be seen in the drawings of Japanese '171 showing a minimum span of the telescopes. The purpose of the telescopes 11 in Japanese '171 is therefore completely unrelated to the possibility of tipping of the vehicle. In the instant application, the Office Action admits, "However, Heckmann does not teach the common carrier disposing the front and back movable telescopes and the cooperating stationary telescopes one behind the other such that the movable telescopes emerge from associated ends." The Office Action goes on to state:

Japanese '171 discloses a carrier 12 that stores beams 11 with their ends adjacent so that the free ends with support member 13 emerge from the carrier 12 at its ends. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heckmann to include a carrier that stores the beams with their ends adjacent in order to store the beams for transport using an alternative arrangement to the various alternative equivalent arrangements already shown in Heckmann's Figures

1-2 and 3-4 and in view of Heckmann's teaching at column 5, lines 1-5 that different embodiments examples can be used as long as the front frame support has arcuate guides with arcuate beams (claim 1).

(Office Action, p. 3). However, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See MPEP §2143.01, In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Clearly the above quoted passage from the Office Action provides no basis for finding a motivation to combine.

The Office Action points to no language in either reference to suggest the desirability of such a combination. Rather the Office Action states,

Further noting the citing on page 8 of the remarks that 'the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination', as just noted Heckmann suggests other arrangements of the beams so long as the front beams are curved at column 5, lines 1-5. Contrary to applicant's remarks on page 8, the first Office Action did not suggest the motivation to combine the references came from Japanese '171, but rather from Heckmann's use of alternative embodiments - a motivation which is being maintained with this Action.

Office Action pg. 5. The Examiner's argument on this motivation point is not consonant with patent law and confuses obviousness of improvement patents. Under the Office Action's reasoning, any structure having at least the front beams and guides curved would be unpatentable in view of Heckmann '967, just because Heckmann '967 suggests different embodiments. In this way the Office Action confuses what was taught by Heckmann '967 with what is claimed by Heckmann '967. While Heckmann '967 may cover subsequent improvements and embodiments which use curved front beam and guides, that does not mean that Heckmann '967 teaches all such subsequent embodiments. That the present invention might be dominated by Heckmann '967 does not render the present invention unpatentable. A separate inquiry must be made to consider the present invention in light of the **teachings** of Heckmann '967. Heckmann '967 disclosed several different

embodiments, but that does not make every subsequent improvement obvious. The fact that the present invention may be an improvement that falls within the scope of the Heckmann '967 patent does not speak to whether that improvement is patentable. Heckmann 967's disclosure of alternative embodiments provides no suggestion to reach outside the concrete pump art to modify a tri-pod support structure having strictly lateral adjustment into a completely different improvement on Heckmann 967's invention.

There is no suggestion, in Japanese '171 or elsewhere in the art, which would motivate the worker skilled in the art to look at vehicle suspension mechanisms which render the vehicle inoperable during suspension. There is no suggestion, in Japanese '171 or elsewhere in the art, which would motivate the worker skilled in the art to look at vehicle suspension mechanisms which render the vehicle less stable. To the contrary, the present invention is directed at structure to be employed while the masted vehicle is in use when the swiveling extendable mast is in an extended mast position, to stabilize the masted vehicle against tilting. There is no suggestion to combine the cited references.

A worker skilled in the art, interested in preventing tilting of a vehicle during use of a mast, would have no motivation to turn to the three-legged, suspension mechanism of Japanese '171 which renders the Japanese vehicle more likely to tip. The fact that Japanese '171 shows a laterally extending telescoping support in suspending a vehicle above the ground by three contact points does not suggest that its telescoping support has applicability for stabilizing a masted vehicle against tilting in a completely different way.

The present invention is not obvious in light of the cited references. A person skilled in the art would lengthen, not reduce the length of the movable telescopes. Further, there is no suggestion in the cited references to use one arc-shaped carrier for two telescopes on each side of the vehicle. Claims 1-5 and 7-10 are allowable over the cited references. The rejection of claim 1 based on the combination is overcome, and should be reversed.

III. EVEN IF JAPANESE '171 IS COMBINED WITH HECKMANN '967, THE CLAIMED INVENTION IS NOT ACHIEVED.

Claims 1-5 and 7-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Heckmann '967 in view of Japanese '171. However, even if Japanese '171 is combined with Heckmann '967, a worker skilled in the art would not arrive at the present invention. Rather, the Examiner has impermissibly used the present application as a hindsight roadmap to modify both the teaching of Japanese '171 and Heckmann '967 to arrive at the present invention.

A review of the embodiment of FIGS. 9 and 10 of Heckmann '967 will further bring to light how the Office Action has performed a hindsight reconstruction. Consider the combination of Japanese '171 with the embodiment of FIGS. 9 and 10 of Heckmann '967. FIGS. 9 and 10 show rear legs 23 and 24 (which are stabilizing extensions) which extend and retract strictly laterally. Presuming that the worker skilled in the art would consider destabilizing art such as Japanese '171 pertinent and have some motivation to make this combination, such a worker would still only substitute the rear legs of Japanese '171 for the rear legs 23 and 24 of Heckmann '967 FIGS. 9 and 10. There is no disclosure or suggestion (other than using hindsight from the present invention) to change any transverse common carrier from the Japanese '171/Heckmann '967 FIG. 9 combination from a transverse orientation to a longitudinal orientation. There is no disclosure or suggestion (other than using hindsight from the present invention) to change any straight common carrier from the Japanese '171/Heckmann '967 FIG. 9 combination from a straight alignment to a curved alignment. There is no disclosure or suggestion (other than using hindsight from the present invention) that two curved stabilizing extensions can be effectively supported from a single common carrier. All of these teachings came solely from the present application, not from Heckmann '967, not from Japanese '171, and not from any combination of Heckmann '967 with Japanese '171.

Further, it should be noted that the curved telescopes of the present invention and Heckmann '967 transmit the stabilizing moment in part due to the fact that the extensions do not TWIST in their carriers. The rear two supports on Japanese '171 appear expressly designed to swing or twist in their carrier. See the cross-section view shown in the upper portion of FIG. 3, showing

the round pipe 11 which can twist or rotate in the square carrier 12. Such a swinging or twisting support has no applicability to the stabilizing structure disclosed in Heckmann '967. That is, the combination of Heckmann '967 with the Japanese '171 reference would render the combination unsatisfactory for its intended purpose, namely to stabilize the vehicle.

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

See MPEP §2143.01. The invention disclosed in the Japanese '171 reference is not suitable for a vehicle with a concrete pump. The cited Japanese patent discloses circular telescopes 11 arranged side to side in a common carrier 12. However, in this Japanese reference, the length of the telescope span is not optimized. The guides are not arc shaped, and the telescopes do not extend along the longitudinal axis of the vehicle.

If the invention of Heckman were combined with the three-legged support of the Japanese '171 reference, the resulting combination would be unstable during operation. This instability is precisely the problem that is addressed by the instant invention. The rejection of claim 1 based on the combination is overcome, and should be withdrawn.

IV. CLAIM GROUP II (CLAIM 5) IS PATENTABLE OVER HECKMANN '967 IN COMBINATION WITH JAPANESE '171.

With respect to claim 5, the Examiner indicated that "making the movable telescopes with different curvatures would be an obvious matter of design choice, as the invention would appear to work just as well with the movable telescopes having different curvatures as having the same curvatures, and as even Heckmann '967 teaches at column 5, lines 60-63 that the beams do not have to have an exactly arcuate form." Contrary to the Examiner's assertion, the specification explains the reason for allowing different curvatures:

The invention allows the telescope jibs to be disposed and designed in accordance with the requirements of the individual case. According to claim 5, the moveable telescopes of at least one, but preferably both, sides of the vehicle therefore have different curvatures and the carriers have a corresponding curvature for each

telescope. Such a design of the frame support permits different spans on the front and back frame supports and thus a better adaptation of the frame support to the tilting moments dependent on the mast.

(page 3, lines 15-21, emphasis added). Allowing for different curves thus provides a better adaptation of the frame support to the tilting moments than it would if the curves were the same. This is particularly true when the mast with the slewing gear is not located on the vehicle centrally with respect to the four points of contact of the telescoping supports on the ground, or when the mast is more commonly extending in one direction than the other. For instance, in the example shown in the figures, the slewing gear 4 is located equally forward with or more forward than the front two supports 22. Because the anti-tipping moment provided by each support 22 is a function of the distance that the support 22 extends from the slewing gear 4, it may be advantageous for the telescoping direction of the rear two supports 22 to be more longitudinally rearward (thus gaining the greatest increase in distance from slewing gear 4 and for the telescoping direction of the front two supports 22 to be more laterally outward (thus gaining the greatest increase in distance from slewing gear 4). Additionally, on page 5 at lines 11-15, the Applicant noted that having different curvatures for each of the telescopes "makes it possible to select the spans of the front and back frame supports differently in accordance with the requirements of an individual case." Thus, the applicant provided reasons for the different curvatures, and the limitations of claim 5 are patentable over the cited references.

Further, the indication in Heckmann '967 at column 5, lines 60-63 that the beams do not have to have an exactly arcuate form has little or nothing to do with whether individual telescopes have different radii of curvature.

Neither Heckmann '967 nor Japanese '171 disclose or suggest that movable telescopes of at least one long side of the vehicle should have different curvatures. The rejection of claim group II (claim 5) is overcome and should be withdrawn.

CONCLUSION

For the various reasons stated, the Examiner's rejection of claims 1-5 and 7-10 is not warranted. Reversal of the Examiner's rejection and indication of allowability of all claims is respectfully requested.

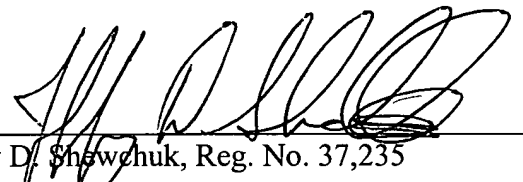
Respectfully submitted,

KINNEY & LANGE, P.A.

Date:

September 9, 2003

By:



Jeffrey D. Shewchuk, Reg. No. 37,235

THE KINNEY & LANGE BUILDING
312 South Third Street
Minneapolis, MN 55415-1002
Telephone: (612) 339-1863
Fax: (612) 339-6580

JDS:DRD

Inventor: Heckmann

Serial No:
10/056,898

Appendix A - CLAIMS PRESENTLY PENDING

1. A vehicle for delivering concrete to an elevated location, the vehicle having opposing long sides, a front and a back, the vehicle comprising:

a concrete pump having a feeding hopper;

a superstructure with at least one swiveling extendable mast on a slewing gear; and

a frame support for stabilizing the vehicle against tilting when the swiveling extendable mast is in an extended mast position, the frame support comprising:

two pairs of movable telescopes, each pair including a front and a back movable telescope, one of the pairs of movable telescopes disposed on each of the long sides of the vehicle, wherein the movable telescopes are for stabilizing the vehicle against tilting when the swiveling extendable mast is in an extended mast position; and

a pair of common carriers, one of the common carriers disposed on each of the long sides of the vehicle, each common carrier providing stationary telescopes disposed at least partly in an arc tangentially to a longitudinal direction of the vehicle and extending in each case from one of the long sides of the vehicle inward substantially as far as a middle of the vehicle and then outward to the same long side, each stationary telescope cooperating with one of the movable telescopes to allow the movable telescope to extend outward from the corresponding long side of the vehicle, wherein the common carrier disposes the front and back movable telescopes and the cooperating stationary telescopes one behind the other such that the movable telescopes emerge from associated front and back ends of the common carrier.

2. The vehicle of claim 1, characterized in that the movable telescopes and the stationary telescopes are congruent with their common carriers.
3. The vehicle of claim 1, characterized in that the stationary telescopes of the common carriers of the long sides of the vehicle are congruent.
4. The vehicle of claim 1, characterized in that the arcs of the stationary telescopes have a common curvature according to one radius, and radii of curvature of the common carriers on each of the long sides of the vehicle are equal.
5. The vehicle of claim 1, characterized in that the movable telescopes of at least one long side of the vehicle have different curvatures, and the common carriers have a corresponding curvature for each telescope.
6. (Previously Canceled).
7. The vehicle of claim 2, characterized in that the stationary telescopes of the common carriers of both sides of the vehicle are congruent.
8. The vehicle of claim 7, characterized in that the arcs of the stationary telescopes have a common curvature according to one radius, and the radii of curvature of both carriers on each of the two long sides of the vehicle are equal.
9. The vehicle of claim 2, characterized in that the arcs of the stationary telescopes have a common curvature according to one radius, and the radii of curvature of both carriers on each of the long sides of the vehicle are equal.

Inventor: Heckmann

Serial No.: 10/056,898

10. The vehicle of claim 3, characterized in that the arcs of the stationary telescopes have a common curvature according to one radius, and the radii of curvature of both carriers on each of the two long sides of the vehicle are equal.

Inventor: Heckmann

Serial No.: 10/056,898

Appendix B - REFERENCES USED IN REJECTION

1. Japanese Patent 5-178171 ("Japanese '171")
2. U.S. Pat. No. 5,638,967 to Heckmann ("Heckmann '967")

(54) LIFT-UP DEVICE FOR MOVABLE WORK VEHICLE

(11) 5-178171 (A) (43) 20.7.1993 (19) JP

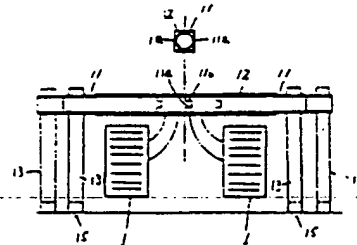
(21) Appl. No. 3-345848 (22) 27.12.1991

(71) ISEKI & CO LTD (72) KENJI KONO(1)

(51) Int. Cl. B60S9/04

PURPOSE: To constitute a lift-up device for a movable work vehicle in such a one designed to perform works such as cleaning, mounting and dismounting, exchange of a travelling crawler, etc., by ensuring lifting action of a car body, and lifting the car body together with the travelling crawler relative to the ground.

CONSTITUTION: In a movable work vehicle wherein grounding support members 13, 13 freely swingable round the axial center in a left/right transverse direction are provided to a car body fitted with travelling crawlers 1 at the positions on the both left/right outsides of travelling crawlers 1, 1, and, at the same time, grounding support members 13, 13 are constructed capable of swinging to a position in which they lift the car body relative to the ground by giving external force that accompanies driven travelling of the car body with their grounding points as reaction force points; left/right grounding support members 13, 13 are so made that left and right are capable of swinging integrally, and also, it is characterized in that they are constructed in a state wherein their slide is adjustable in width direction.



(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平5-178171

(43) 公開日 平成5年(1993)7月20日

(51) Int.Cl.⁵

B 6 0 S 9/04

識別記号

庁内整理番号

8510-3D

F I

技術表示箇所

審査請求 未請求 請求項の数 1 (全 4 頁)

(21) 出願番号 特願平3-345848

(22) 出願日 平成3年(1991)12月27日

(71) 出願人 000000125

井関農機株式会社

愛媛県松山市馬木町700番地

(72) 発明者 河野 健治

愛媛県伊予郡砥部町八倉1番地 井関農機
株式会社技術部内

(72) 発明者 石橋 清春

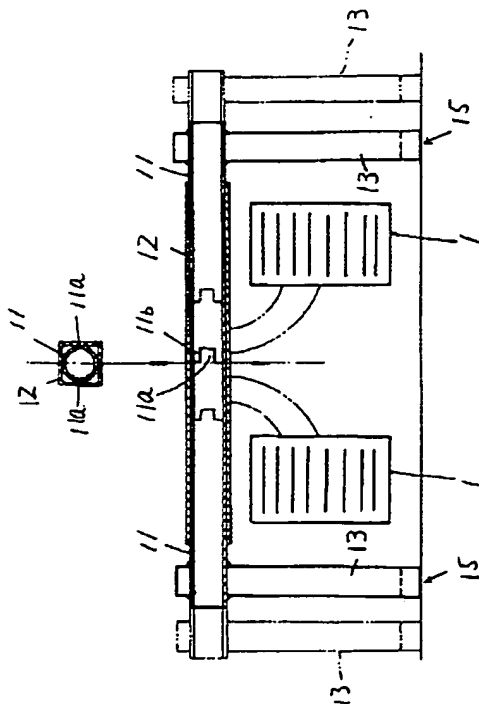
愛媛県伊予郡砥部町八倉1番地 井関農機
株式会社技術部内

(54) 【発明の名称】 移動作業車のリフトアップ装置

(57) 【要約】

【目的】 車体の持上げ作用を確実にし、且つ、車体を走行クローラと共に対地的に持上げることによって、走行クローラの清掃、着脱交換等の作業を簡易に能率よく行わんとするものである。

【構成】 走行クローラ1を具備する車体2に、該走行クローラ1、1の左右両外側位置において左右横方向の軸芯周りで揺動自在な接地支持部材13、13を設けると共に、前記接地支持部材13、13を、その接地点を反力点として、前記車体の駆動走行に伴う外力の付与により、前記車体2を対地的に持上げ支持する姿勢に揺動可能に構成してある移動作業車において、前記左右の接地支持部材13、13は、左右が一体的に揺動可能で、且つ、横幅方向にスライド調節可能な状態に構成してあることを特徴とする。



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【特許請求の範囲】

【請求項1】 走行クローラ1を具備する車体2に、該走行クローラ1、1の左右両外側位置において左右横方向の軸芯周りで揺動自在な接地支持部材13、13を設けると共に、前記接地支持部材13、13を、その接地点を反力点として、前記車体の駆動走行に伴う外力の付与により、前記車体2を対地的に持ち上げ支持する姿勢に揺動可能に構成してある移動作業車において、前記左右の接地支持部材13、13は、左右が一体的に揺動可能で、且つ、横幅方向にスライド調節可能な状態に構成してあることを特徴とする移動作業車の車体リフトアップ装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、車体の下部に走行クローラを具備する移動作業車の車体リフトアップ装置に関する。

【0002】

【従来の技術】この種の走行クローラ付移動作業車であって、走行クローラの点検整備や、クローラベルトの交換或は走行クローラの清掃時などにおいては、車体を持ち上げて走行クローラを地面から一定距離浮上させておいてから行うと便利であり、作業も能率的に行うことができる。

【0003】特に、従来のコンバインにおいては、湿田等に入って泥土やワラ屑を除去する時などに、車体を対地的に上昇させてクローラのみを空転させることができなかった為、クローラ内部の掃除が困難であった。

【0004】

【発明が解決しようとする課題】本発明は、かかる従来の技術の問題解決を図らんとするもので、特に、本発明は車体を対地的に持ち上げることによって、走行クローラの点検整備、清掃等の作業を簡便に能率よく行わんとするものである。この目的達成のため、本発明は次のような技術的手段を講じた。

【0005】

【課題を解決するための手段】すなわち、本発明にかかる技術的手段は、走行クローラ1を具備する車体2に、該走行クローラ1、1の左右両外側位置において左右横方向の軸芯周りで揺動自在な接地支持部材13、13を設けると共に、前記接地支持部材13、13を、その接地点を反力点として、前記車体の駆動走行に伴う外力の付与により、前記車体2を対地的に持ち上げ支持する姿勢に揺動可能に構成してある移動作業車において、前記左右の接地支持部材13、13は、左右が一体的に揺動可能で、且つ、横幅方向にスライド調節可能な状態に構成してあることを特徴とする。

【0006】

【作用】車体持ち上げに際しては、スタンド15の下端を傾斜姿勢の状態にして地面に接地させる。そこで、作

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業者は、該スタンド下端の接地点が移動しないようにその下端に設けた接地安定保持部材14の上面に足を載せて体重をかけ踏み込み固定した状態とし、そして、運転操縦部9の走行操作レバー8を操作することで、走行クローラ2を駆動し機体を進行させる。

【0007】すると、車体2の駆動走行に伴う外力を該車体2が受けて、接地支持部材13がその接地点を反力点として順次揺動起立すると共に、この接地安定保持部材14全体が接地することで起立安定姿勢を保持し、車体の前部が走行クローラと共に対地的に持ち上げられる。そして、車体の後部をジャッキ16により持ち上げることによって走行クローラ1全体が対地的に浮上することになる。

【0008】クローラベルトを交換する際には、予め、左右のスタンドを外側方にスライド移動調節しておく。

【0009】

【発明の効果】従って、本発明によれば、走行クローラ全体を対地的に浮上させることができるので、クローラ部のみを空転させることができ、クローラ部に水をかけるのみで、クローラ部が高速回転しているため、簡単に泥やワラ屑などを取り除くことができ、メンテの向上を図り得る。

【0010】また、クローラを取り外す時も、クローラが地面から離間しているため、クローラの張りボルトを簡単にゆるめることができ、しかも、左右の接地支持部材を外側方に移動調節することができるので、クローラベルトの着脱、交換が容易である。左右のスタンド（接地支持部材）は一体的揺動構成であるため、左右位置の路面の高さが異なっても、どちらか一方側のスタンドが揺動起立すると、これに連動して他方側のスタンドも作用することになり、車体を確実に持ち上げることができる。

【0011】

【実施例】以下本発明の1実施例を図面に基づいて説明する。図1は移動作業車の一例としてコンバインを示し、走行クローラ1を備えた車体2の前方に、刈取部3を横軸4周りに昇降可能に設け、該車体2上に脱穀部5を搭載してコンバインを構成している。

【0012】前記刈取部3の一侧部にはエンジン6が搭載され、エンジン6の上方に運転席7が、また、この運転席近くには機体の前後進走行を司る操作レバー（油圧無段変速装置のHSTレバー）8等を有した操縦ボックス9が設置されている。脱穀部5の横側部にはホッパー10などからなる穀粒袋詰処理装置が配置されている。

【0013】走行クローラ1は、駆動輪1a、従動輪1b、転輪1cとこれらに巻回するクローラベルト1dなどからなる。車体2の前部には支軸11を横方向に架設すると共に、走行フレーム12に対しこの軸芯周りに回動自在に軸受構成している。接地支持部材13の先端に

は側面視でし字型となるよう接地安定保持部材14を設けて昇降用スタンド15を構成し、そして、このスタンド15は接地支持部材13の基部を前記支軸11に嵌合固着することにより、機体進行前後方向に揺動可能な状態に設けている。

【0014】支軸11は、中間部で二つに分割し、互いに連動して回転するよう両者の対向側には係合凸部11aと係合凹部11bを設けて嵌合せしめ、左右の接地支持部材13、13が一体的に揺動するよう構成している。しかも、この左右の接地支持部材13、13は左右横幅方向にスライド調節可能に構成している。なお、このような接地支持部材13のスライド調節後においても、常時、左右の接地支持部材13、13が一体的に揺動するよう構成することができるものであることは勿論である。接地安定保持部材14は車体持ち上げ時に足を載せ体重をかけて地面側に踏み込み固定できるよう幅広く構成している。

【0015】また、前記昇降用スタンド15は、前記支軸11への支持位置から接地安定保持部材14の接地点Pまでの長さLを、その支持位置の地上高さHより大となしている。更に、該昇降用スタンド15は、機体の左右両外側方に配置するものであるが、特に、機体の前後方向の重心が走行クローラ1の前部側に位置するため、この重心位置近くにおける左右走行クローラ1、1の両外側方に配置している。

【0016】そして、車体の後部には昇降可能なジャッキ16を車体横幅方向中央部に設置している。従って、車体前部における左右両側のスタンド15と後部のジャッキ16との3点支持でもって移動作業車全体を持ち上げることができるものである。左右のスタンド15、15が別々に揺動する構成では、路面が平らな場合は問題ないが、農道等でコンバインをリフトアップする時、その路面の高さが左右異なっていると、路面に接地している側のスタンドはコンバインを正規に持ち上げることができるが、路面と確実に接地していない側のスタンドは起立しなかったり、途中までしか起立しないなどの不具合が

あった。しかし、上記のように左右スタンドの一体的揺動構成による場合は、左右位置の路面の高さが異なっても、どちらか一方側のスタンドが揺動起立すると、これに連動して他方側のスタンドは作用することになり、コンバインの前部を確実に持ち上げることができる。

【0017】クローラベルトを取り外す際には、これの接近位置で起立しているスタンドが邪魔になるので、この左右のスタンドを、少なくともクローラ幅以上のスペースを保持する位置（仮想線位置）まで外側方にスライド調節しておく。そして、このような状態下においてスタンドを揺動起立させて車体を持ち上げればよく、従って、クローラベルトの交換、着脱に際してはそのスペース内で簡単に行うことができる。

【図面の簡単な説明】

【図1】コンバイン要部の右側面図である。

【図2】コンバイン要部の背面図である。

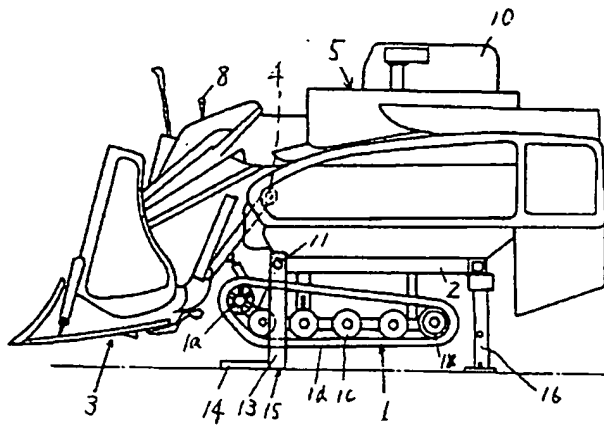
【図3】同要部の切断背面図である。

【図4】コンバイン要部の左側面図である。

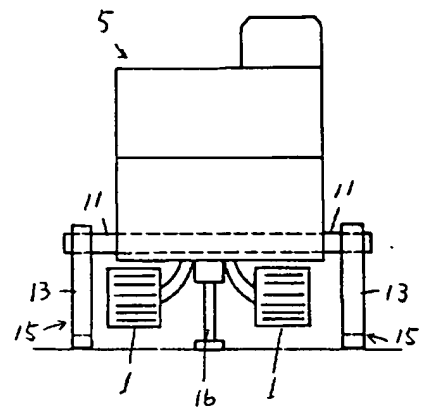
【符号の説明】

- | | |
|----|-----------|
| 1 | 走行クローラ |
| 2 | 車体 |
| 3 | 刈取部 |
| 4 | 横軸 |
| 5 | 脱穀部 |
| 6 | エンジン |
| 7 | 運転席 |
| 8 | 操作レバー |
| 9 | 操縦ボックス |
| 10 | ホッパー |
| 11 | 支軸 |
| 12 | 走行フレームパイプ |
| 13 | 接地支持部材 |
| 14 | 接地安定保持部材 |
| 15 | 昇降用スタンド |
| 16 | ジャッキ |

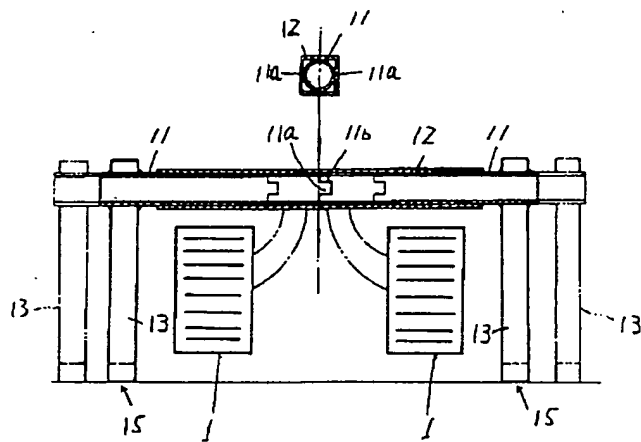
【図1】



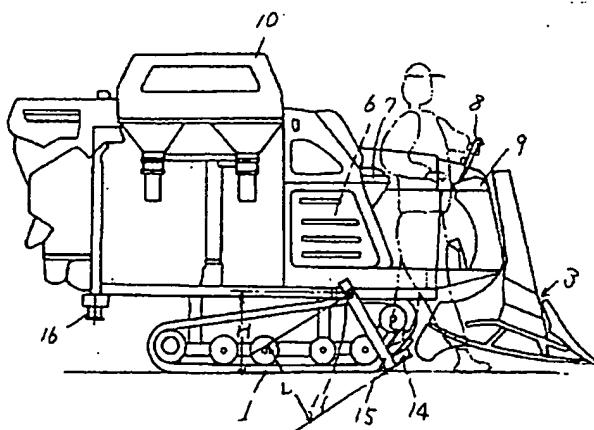
【図2】



【図3】



【図4】



United States Patent [19]

Heckmann

[11] Patent Number: 5,638,967
 [45] Date of Patent: Jun. 17, 1997

[54] VEHICLE WITH A BUILT-ON SWIVELING MAST AND A FRAME SUPPORT

3,194,414 7/1965 Tourneau 212/145

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[75] Inventor: Horst Heckmann, Sprockhovel, Germany

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[73] Assignee: Schwing GmbH, Herne, Germany

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[21] Appl. No.: 625,776

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[22] Filed: Mar. 29, 1996

Primary Examiner—Thomas J. Brahan

Related U.S. Application Data

[63] Continuation of Ser. No. 362,280, Dec. 22, 1994, abandoned.

[57] ABSTRACT

Foreign Application Priority Data

Dec. 28, 1993 [DE] Germany 43 44 779.1

In a vehicle (1) having a swiveling mast (12) which is built on a slewing gear (11) disposed on a frame and has associated therewith a frame support (18) including arcuate guides fixed on the vehicle for beams (19 to 22) to be drawn into the vehicle profile, the guides (31 to 34) and the beams being disposed in a horizontal plane and the guides (31 to 34) extending substantially between the longitudinal sides (35, 36) of the vehicle profile, the invention provides for the guides (31 to 34) to be disposed tangentially to the longitudinal direction of the vehicle, each extending inwardly from one of the longitudinal sides (35, 36) of the vehicle profile substantially to the center (5) of the vehicle and from there further to the same longitudinal side (35, 36) of the vehicle profile (FIG. 1).

[51] Int. Cl.⁶ B66C 23/78

[52] U.S. Cl. 212/302; 212/304; 280/763.1; 280/766.1

[58] Field of Search 212/301, 302, 212/304, 305, 306, 303; 280/763.1, 764.1, 765.1, 766.1

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25 Claims, 5 Drawing Sheets

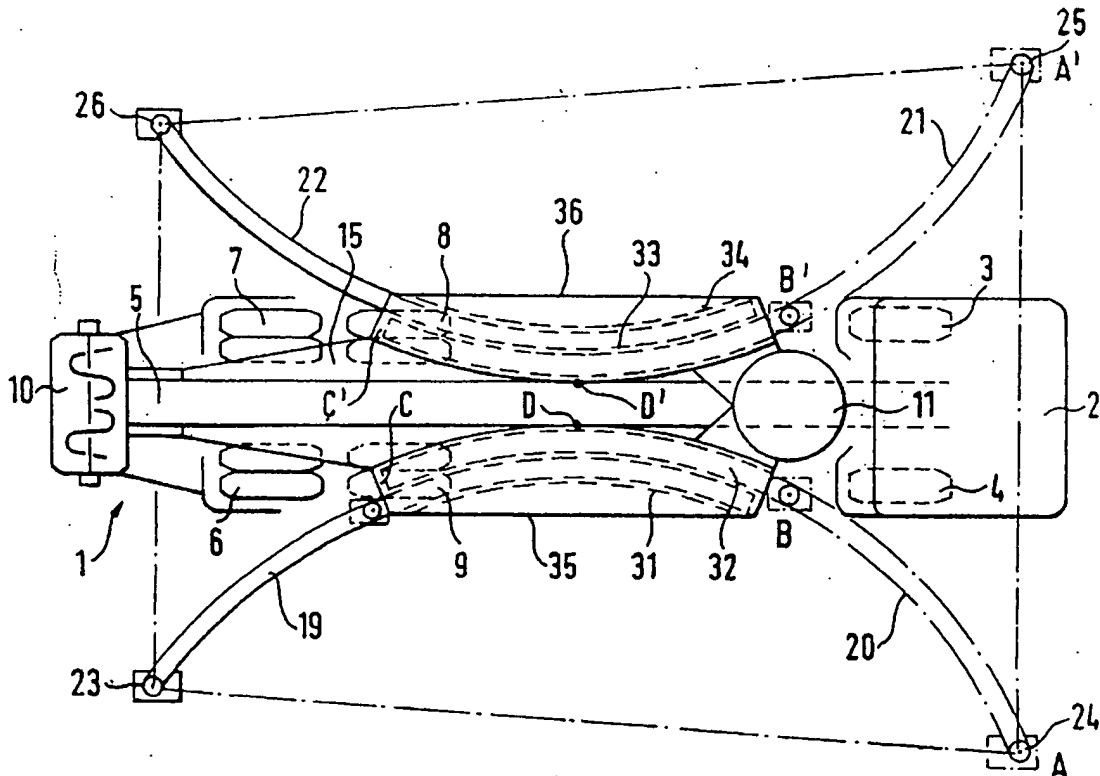


FIG. 1

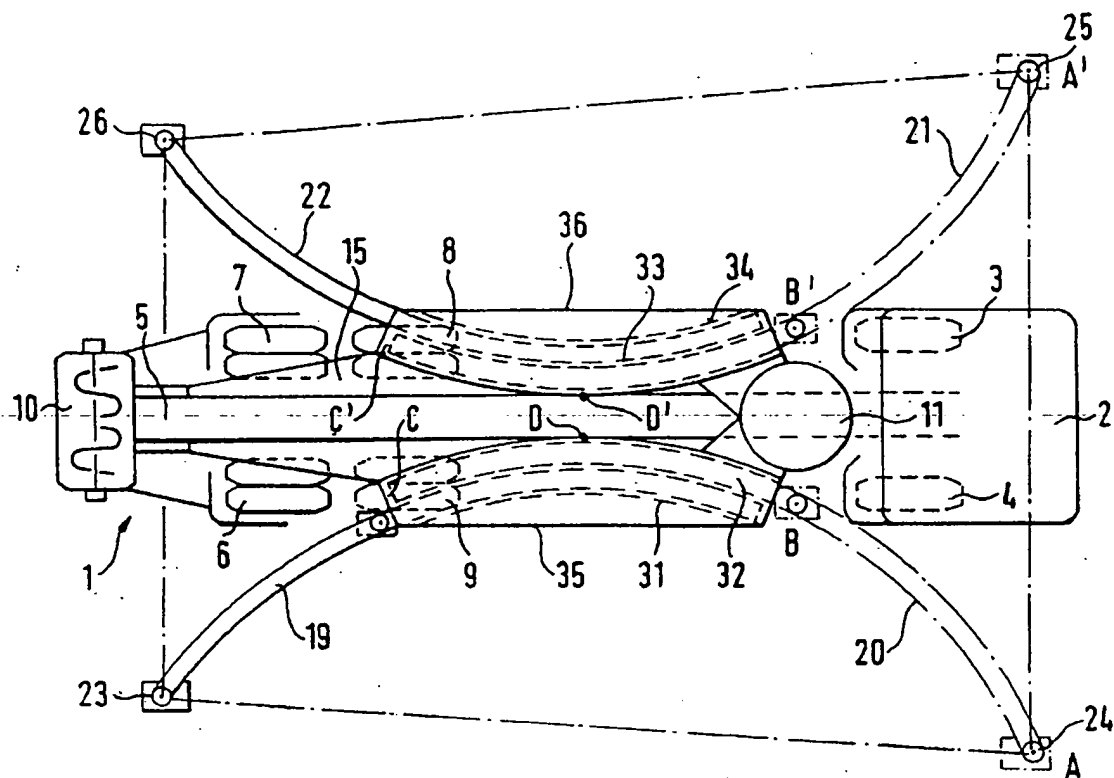


FIG. 2

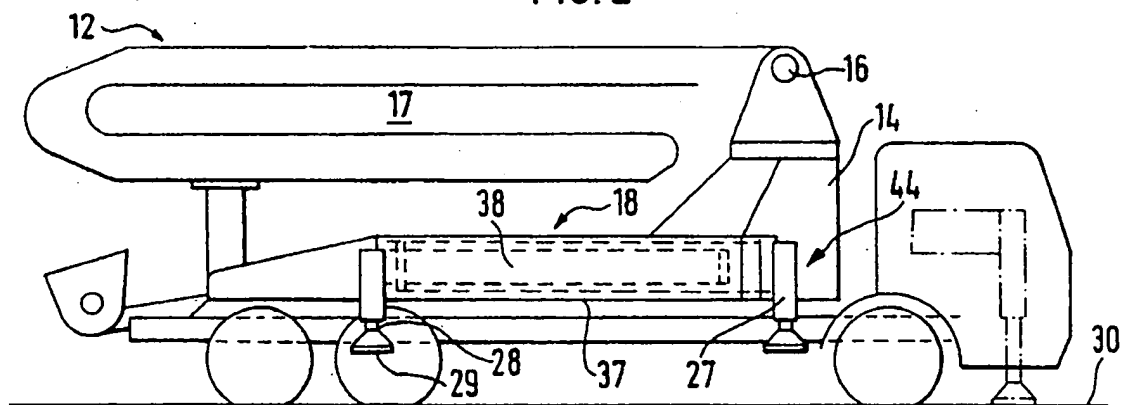


FIG. 3

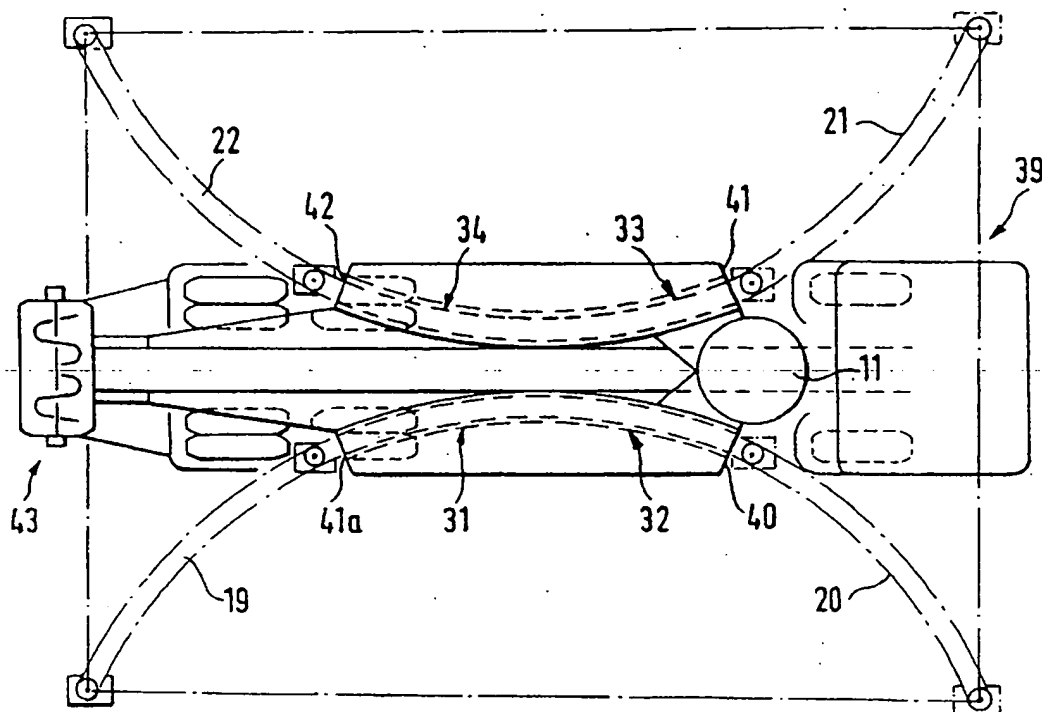


FIG. 4

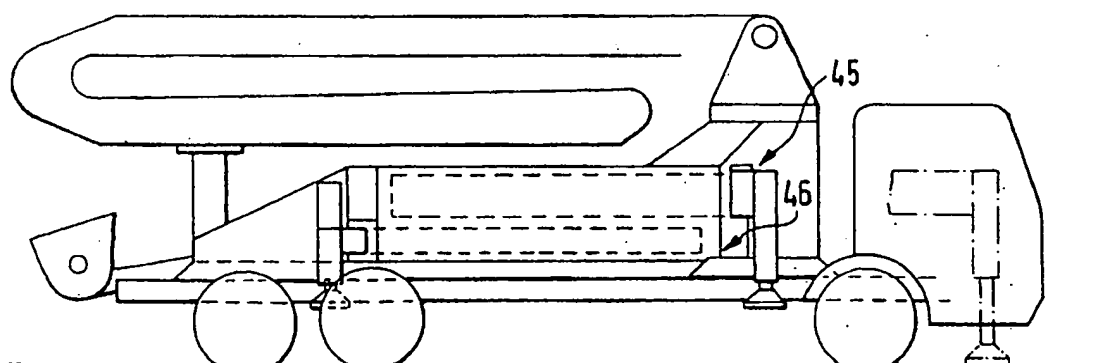


FIG. 5

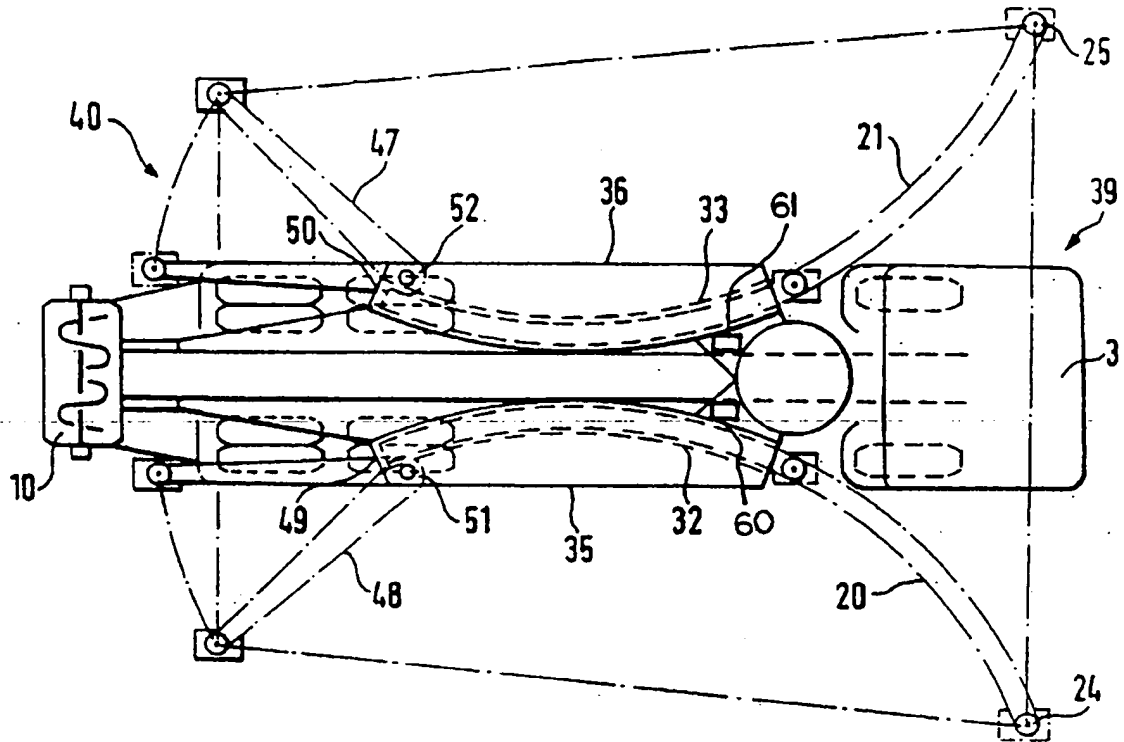


FIG. 6

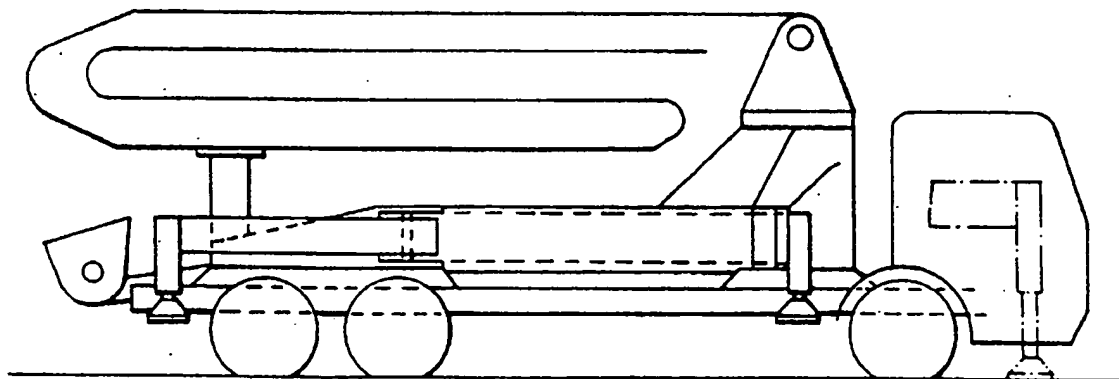


FIG. 7

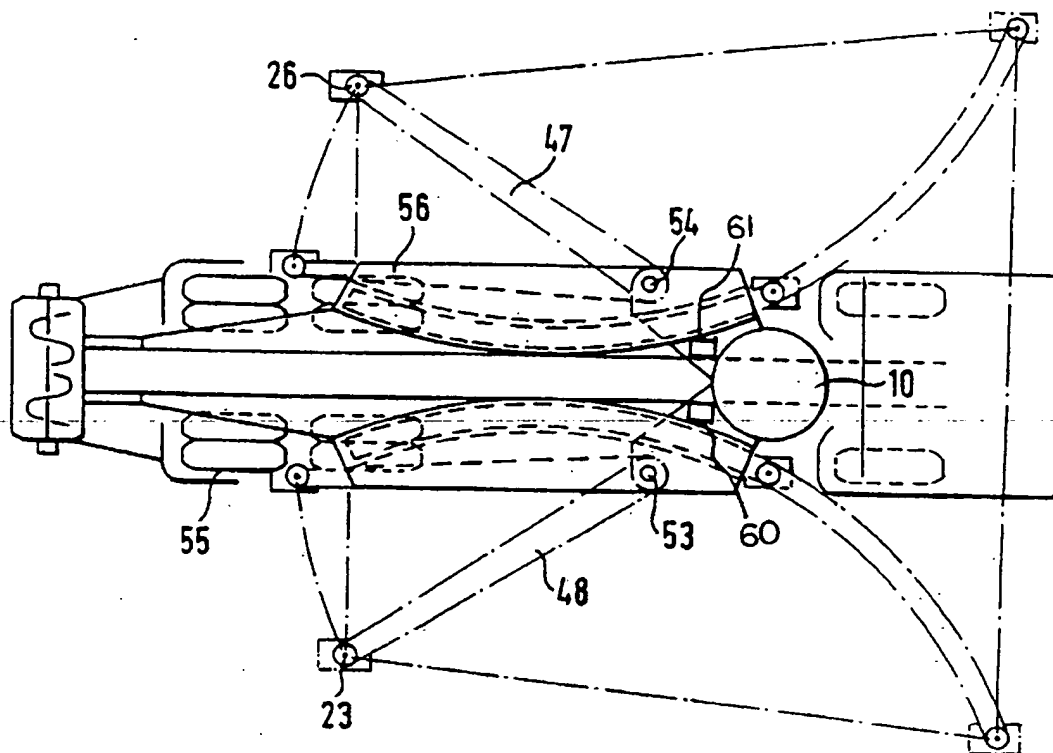


FIG. 8

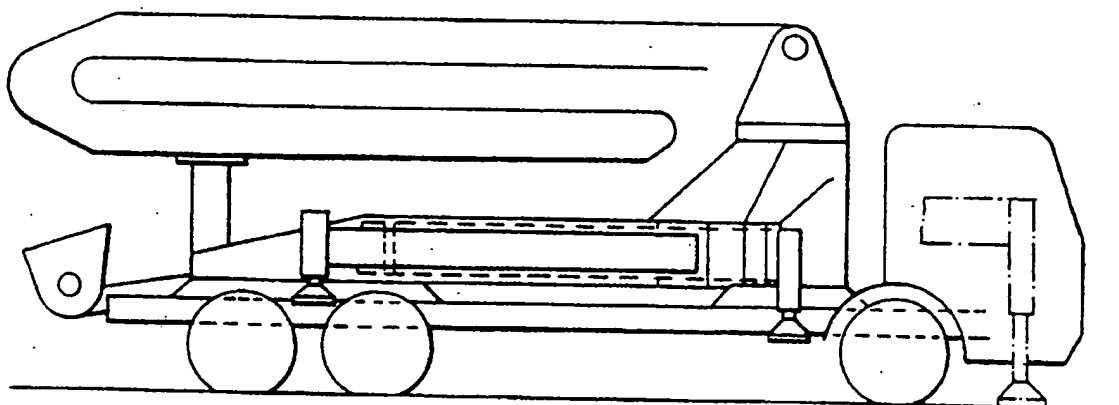


FIG. 9

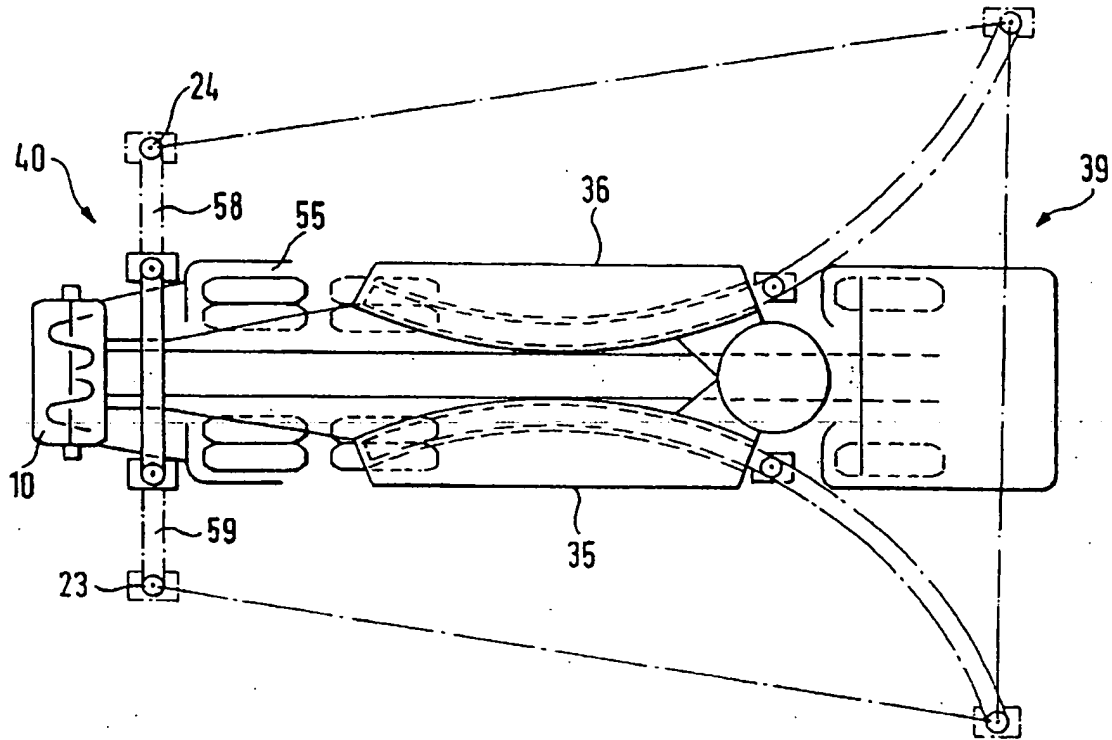
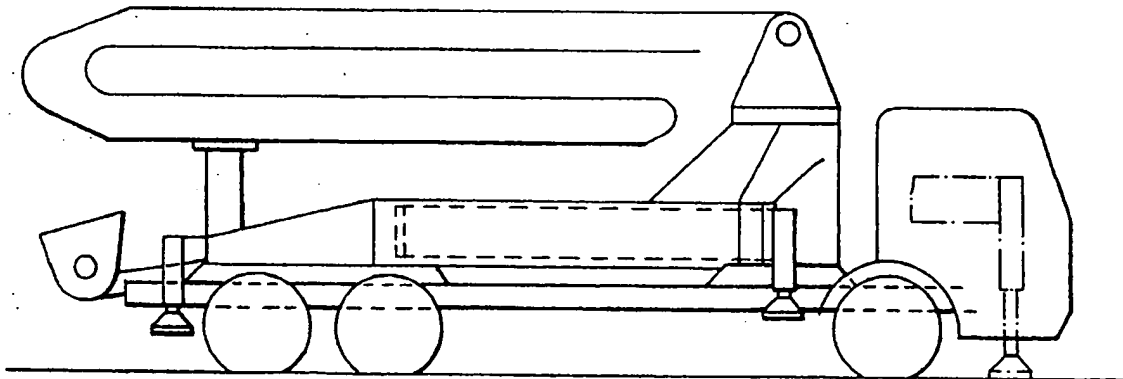


FIG. 10



VEHICLE WITH A BUILT-ON SWIVELING MAST AND A FRAME SUPPORT

BACKGROUND OF THE INVENTION

This is a file wrapper continuation of application Ser. No. 08/362,280 filed Dec. 22, 1994, now abandoned.

The present invention relates to a vehicle with a built-on swiveling mast and a frame support according to the preamble of claim 1.

Such vehicles are intended as road vehicles for various purposes. The invention relates in particular to vehicles with a built-on concrete pump, the mast serving as a distributing boom which bears a concrete delivery pipe so as to discharge the concrete delivered by the pump. The invention will be explained in more detail in the following substantially with reference to this preferred embodiment of the invention.

Powerful vehicles of the type in question here must generally be provided with greatly projecting masts. With traveling concrete pumps the necessary projections of the mast require it to be subdivided with operating joints which also permit it to fold up for the driving mode. Such masts reach considerable heights and trigger a moment of tilt dependent on the projection and the length of the mast. The frame support removes the moment of tilt onto the base of the vehicle, thereby preventing the vehicle from overturning with the mast. The development of such vehicles is subject to the necessity of providing constantly increasing mast lengths and radii due to the increasing requirements while still maintaining the vehicle profile for the driving mode. With traveling concrete pumps it is generally important not to fall below the permissible vehicle width in order to avoid restrictions for special transports that are required if the vehicle has excess widths.

The frame support generally takes place on four points, in particular when the slewing gear of the mast permits an unlimited pivoting angle. This means for the support that lesser problems arise with moments of tilt substantially about the transverse axis of the vehicle than with support of moments of tilt about the longitudinal vehicle axis. One reason for this is that the vehicle weight produces a considerably greater moment about the transverse axis than about the longitudinal axis, which counteracts the moment of tilt of the mast. However since the slewability of the mast can in most cases not be limited in the slewing gear to moments of tilt about the transverse axis, long beams result for the support of corresponding mast lengths and it is difficult to house these beams within the vehicle profile for the driving mode.

The invention starts out from a known vehicle with a concrete pump and a distributing boom built on its chassis, the slewing gear of the boom being built on the chassis or a subframe of the chassis in the direct vicinity of the driver's cab, as is customary in such vehicles, while the feeding hopper of the concrete pump is located at the tail of the vehicle and parts of the concrete delivery device are disposed in the center of the vehicle. In this vehicle four beams are provided for the four-point frame support. The front frame support has arcuate telescopes fixed on the vehicle in which the beams are disposed in such a way that they start between driver's cab and slewing gear and can be extended toward the front. The two rear beams, by contrast, are housed in linear telescopes.

The guides and the beams displaceable therein must remain within the two lateral limits of the vehicle profile for the driving mode, the guides being somewhat shortened to permit the bottom supports disposed at the free ends of the

beams and usually adapted to be run in and out to be housed within the vehicle profile for the driving mode. For the front frame support this results in a limitation to short extraction lengths of the beams and accordingly shortened guides. The convex curvature of the guides and beams pointing rearward toward the tail of the vehicle also causes the supports to be extended toward the front and into the vicinity of the longitudinal vehicle axis, thereby shortening the lateral distance between the supporting points and the longitudinal vehicle axis. The known vehicle is therefore not suitable for masts with great lengths and projections or for slewing gear with unlimited swiveling.

The invention goes a different way, its basic idea being rendered in claim 1. Further features of the invention are the object of the subclaims.

According to the invention the arcuate shape of the guides and beams oriented tangentially to the longitudinal center causes the supports to be run out further to the side of the vehicle, thereby effectively counteracting the tilting of the vehicle about one or the other longitudinal vehicle side. Since the guides approach the particular profile side of the vehicle with their two end points, one obtains beams whose length depends on the necessary span and which can be housed within the vehicle profile for the driving mode. These beams are the longer the closer the apex of the curvature of the guides approaches the center of the vehicle. This is limited only by other structures built on the vehicle that must be housed in the longitudinal center of the vehicle, as is the case for example with part of the delivery device for traveling concrete pumps.

At least the front frame support is realized in this way according to the invention. This takes account of the fact that, in vehicles where the slewing gear of the mast is shifted from the center of the vehicle toward the front, the lateral span of the front frame support is the critical one and must therefore especially be increased. This is regularly the case with traveling concrete pumps, resulting from the concrete pump being housed on the vehicle frame. Due to the concrete pump being charged at the tail of the vehicle the front projections of the mast are also generally preferred, if local conditions permit.

Telescopes are also preferably used in the inventive vehicle to guide the beams. This is the object of claim 2.

An optimization of the length of the beams and guides results from the features of claim 3. Since the guides of the support start on the slewing gear and are located on the arc of a circle, the construction is not only simplified but it is also possible to shift the curves of the guides far into the center of the vehicle. In these embodiments of the invention a rear support is always provided as well so that an additional support toward the rear results on each loaded vehicle side. The necessary guide for this should in its turn start in the area of the tail of the vehicle in order to reach an optimal span. Claim 4 describes an embodiment of the invention wherein a four-point support results on each longitudinal vehicle side.

Although special attention is paid to vehicles of the inventive type with the slewing gear shifted from the center of the vehicle toward the front for front frame support due to the described conditions of application, it has proven expedient to transfer the form of the front frame support to the rear frame support. This is the object of claim 5. Such vehicles have the advantage of also shifting the rear supporting points further to the side of the vehicle, thereby counteracting the tilting of the vehicle about its longitudinal vehicle axis.

With this type of support the guides are disposed concentrically in a common horizontal plane according to claim 5, so that one gains additional room on the vehicle in the planes located thereabove and therebelow. The different embodiment of the invention wherein the guides are disposed in horizontal parallel planes has the effect, by contrast, that the guides have an optimal length and can be housed within the vehicle profile, whereby the available room can be utilized for the guides in terms of its height.

On the other hand the invention offers sufficient freedom with respect to the details of construction necessary for its realization. Embodiments with the features of claim 7 permit the rear support to be formed differently from the front support depending on the requirements of a given case, if this is necessary for certain reasons. One can thereby realize the features of claim 8 which provide the rear frame support with a joint for connecting the guides with the frame. This joint is disposed in the area of the slewing gear to permit the available length on the vehicle profile to be fully utilized.

However such joints can also be shifted further toward the tail of the vehicle with the features of claim 9, which generally results in optimal spans of the rear frame support as well.

The preferred embodiment of the invention wherein the beams are housed in telescopes also permits the handling of the frame support to be substantially simplified, since the beams, which are heavy due to their length and their load, need no longer be moved by hand but have their own drive. This moreover increases safety, since such drives can be designed so as to be effective over the total span.

Details, further features and other advantages of the invention will emerge from the following description of embodiments with reference to the figures in the drawing, in which

FIG. 1 shows a plan view of a first embodiment of the invention,

FIG. 2 shows a side view of a first embodiment of the invention,

FIG. 3 shows a further embodiment represented as in FIG. 1,

FIG. 4 shows the embodiment of FIG. 3 represented as in FIG. 2,

FIG. 5 shows a modified embodiment represented as in FIGS. 1 and 3,

FIG. 6 shows the embodiment of FIG. 5 represented as in FIGS. 2 and 4,

FIG. 7 shows a further modified embodiment represented as in FIGS. 1, 3 and 5,

FIG. 8 shows the object of FIG. 7 in a view corresponding to FIGS. 2, 4 and 6,

FIG. 9 shows a different embodiment represented as in FIGS. 1, 3, 5 and 7, and

FIG. 10 shows a view of the object of FIG. 9 represented as in FIGS. 2, 4, 6 and 8.

FIGS. 1 to 9 show by dash-dot lines the drawn-out lengths of the beams of the frame support, whereby the dashed lines show the details not appearing in the Figures but necessary for comprehension.

As indicated by the embodiment example in FIGS. 1 and 2, truck chassis 1 has driver's cab 2 and single-tired steering assembly 3, 4 at the front and chassis beam 5 on which double-tired rear axles 6 to 9 are suspended. According to the embodiment example a concrete pump is built on chassis 5, its feeding hopper 10 for supplying the concrete pump from a mixer being disposed at the tail.

Behind driver's cab 2 there is slewing gear 11 of concrete distributing boom or mast 12. The slewing gear is seated on frame 14 which is in its turn seated on the chassis frame via subframe 15. Mast 12 is hinged via horizontal working joint 16 and divided into sections that are in turn interconnected with working joints not shown. This permits the mast to fold up as apparent from FIG. 2, shown at 17. On the other hand the mast can be extended by being unfolded, which is not shown specifically in the figures.

A frame support designated in general as 18 is disposed on subframe 15. The embodiment example of FIGS. 1 and 2 involves a four-point support with the aid of four beams 19 to 22 which bear supports 23 to 26 at their free ends. These supports are of substantially identical design and telescopic. Outer telescopes 27 are seated on particular beams 19 to 22, while inner telescopes 28 are provided with base plates 29 which transmit the supporting pressure to base 30.

In the view of FIG. 2 supports 23 to 26 are shown by unbroken lines for the driving mode. On the right in FIG. 2 in the area of driver's cab 2, i.e. in the dash-dot representation of FIG. 1, the drawn-out supports are rendered by dash-dot lines. This indicates that when supports 23 to 26 are drawn out the vehicle is lifted off standing surface 30 and a torsion-resistant construction comprising frame 15, beams 19 to 22 and supports 23 to 26 removes the forces from mast 12 onto standing surface 30.

Guides 31 to 34 are associated with beams 19 in a horizontal plane. These guides are located substantially between longitudinal sides 35, 36 of the vehicle profile. However they are disposed tangentially to the longitudinal direction of the vehicle and each extend inwardly from one of longitudinal sides 35, 36 of the vehicle profile substantially to the center of the vehicle, which is given by beam 5 in the embodiment example, and from there further to the same longitudinal side 34, 35 of the vehicle profile.

The guides are housed in hollow section portion 37, but not specifically shown. They may be slideways that ensure rotationally firm guidance for beams 19 to 22. To guarantee better running of beams 19 to 22 in hollow sections 37 the guides can then also consist wholly or partly of roll bodies. Together with beams 19 to 22 form telescopes that are designated in general as 38 in FIG. 2.

As indicated in particular by the representation in FIG. 3, guides 32, 33 of front frame support 39 with supports 24 and 25 start at 40 and 41 in the area of slewing gear 11 and follow the arc of a circle. Frame support 39 is supplemented by further frame support 43 associated with the tail of the vehicle, its guides 31 and 34 starting at 41 and 42 at tail 43. Starting refers to the slip-over end of telescope 38 of guides 31 to 34.

Frame supports 39 and 40 each comprise a pair of beams 19, 22 or 20, 21 so that one beam of pair of beams 19, 22 or 20, 21 is disposed on each vehicle side given by vehicle profile 35 or 36. This four-point support has the advantage that the vehicle can be raised as a whole, as apparent from the dash-dot representation in FIG. 1, as soon as beams 19 to 22 are run out of their guides and supports 23 to 26 have been run out.

In the embodiment examples of FIGS. 1 and 2 all guides 31 to 34 are arcuate and disposed as described above. The embodiment example of FIG. 1 differs from the embodiment example of FIG. 2 only in that guides 31 to 34 are disposed concentrically in a common horizontal plane according to reference arrow 44, as apparent from FIG. 2. By contrast, guides 31 to 34 are mounted one above the other in horizontal parallel planes that are indicated by reference arrows 45, 46 in FIG. 4.

In the embodiment examples of FIGS. 5 to 9, however, front frame support 39 and rear frame support 40 are formed differently. All embodiment examples have in common that front frame support 39 has arcuate guides 32, 33 with accordingly curved beams 20, 21. This obtains maximum spans beside vehicle 1 at the height of the driver's cab, as shown in the embodiment examples of FIGS. 1 and 3. In the embodiment examples of FIGS. 5 to 8, frame support 40 formed differently from frame support 39 uses rockers 47 and 48 which have relatively smaller spans than beam 20 and 21. This results in, not the rectangle shown in the embodiment example of FIGS. 3 and 4 having supports 23 to 26 disposed in its corners, but rather a trapezoid whose shorter side is associated with the tail of the vehicle with prefeeding hopper 10 of the concrete pump. The rocker joints are disposed beside inner ends 49 and 50 of guides 32, 33 at 51 and 52. This ensures that the total length of rockers 48 can be housed within the profile between profile sides 35, 36 when the vehicle goes into the driving mode.

In contrast to the embodiment example of FIGS. 5 and 6, rocker joints 53, 54 of the embodiment example of FIGS. 7 and 8 are likewise disposed in the direct vicinity of slewing gear 10 so that supports 23, 26 are located for the driving mode between rear wheel axles 55, 56 provided as rigid axles, while in the embodiment example of FIGS. 5 and 6 they come to lie beside front supports 24, 25.

In the embodiment example of FIGS. 9 and 10 front frame support 39 again corresponds to all embodiments. However rear frame support 40 uses not rockers but rather draw-out transverse beams 58, 59 that are disposed behind trailing rigid axle 55 and in front of prefeeding container of the concrete pump. Supports 23, 24 can therefore be drawn in between longitudinal profile sides 35, 36 of the vehicle in the driving mode.

The construction of the telescopes is not shown specifically. The beams are maneuvered by a drive means 60, 61, shown generally in block form in FIGS. 5 and 7. With a mechanical drive the energy transmission for running the beams in and out can take place via a motor pinion which meshes with a toothed rack bent in accordance with the curvature of the arc-shaped telescope and is driven by a motor fixed on the chassis. The circular arc shape of the telescopes is assumed by the embodiment of FIGS. 1 and 2, among others. The radius and thus the position of the telescope arc is determined by points A, B, C. Point A results from the position of support 21 or 25 in the run-out state. This position is in its turn given by the moment of reaction opposing the moment of tilt of the mast. Point B is passed through by beam 20, 21 and marks the position of support 24, 25 in the driving mode of the vehicle. It is adjoined by the slip-over end of the telescope. Point C lies on one of longitudinal vehicle sides 35, 36 and simultaneously marks the end of the telescope guidance, i.e. the path that beams 20, 21 can cover before they protrude outwardly from the vehicle profile.

The distance between points D (D') protruding furthest inward toward the center of the vehicle and the two inner guides 32, 33 marks a free space for the units mounted on the center of the vehicle chassis.

Since the telescopes are formed as statically stable box frame constructions, beams 20, 21 need not have an exactly arcuate form. In these cases the drive means can also be a rope winch, the traction rope being guided so as to lie on the outer arcuate side of the telescope and the winch being driven by a motor fixed on the chassis. The drive can also be provided via a chain hoist that is driven via a chain sprocket by a motor fixed on the chassis.

In general one will give a box-shaped rectangular form to the profile section realizing the telescope guidance. The required rotational firmness about the axis of the beams then already results from the profile. However the cross section can also be tubular.

I claim:

1. A vehicle having a head, a tail and a pair of sides longitudinally extending between the head and the tail of the vehicle to form a profile of the vehicle, the vehicle comprising:

a frame;

a slewing gear disposed on the frame;

a swiveling mast built on the slewing gear;

a first frame support coupled to the frame of the vehicle, the first frame support including:

at least one arcuate beam movably coupled to the frame in a substantially horizontal plane; and

at least one guide coupled to the frame and extending inwardly from one of the longitudinal sides of the vehicle profile, wherein said at least one guide guides movement of said at least one beam in a substantially horizontal plane tangentially to the longitudinal direction of the vehicle so that said at least one beam may be drawn into the vehicle profile.

2. The vehicle of claim 1 wherein the vehicle defines a hollow section portion in which said at least one guide is disposed and wherein said at least one beam is telescopically received within the hollow section portion.

3. The vehicle of claim 2 wherein the hollow section portion has a rectangular cross-section.

4. The vehicle of claim 2 wherein the hollow section portion is tubular.

5. The vehicle of claim 1 wherein said at least one guide lies on an arc of a circle.

6. The vehicle of claim 1 wherein said at least one arcuate beam is movable between a first position and a second position, wherein said at least one arcuate beam extends from the slewing gear outward from the vehicle profile towards the head of the vehicle in the first position and wherein said at least one arcuate beam is substantially positioned within the vehicle profile in the second position.

7. The vehicle of claim 1 wherein said at least one arcuate beam is movable between a first position and a second position, wherein the arcuate beam extends outward from the vehicle profile towards the tail of the vehicle in the first position and wherein said at least one arcuate beam is substantially positioned within the vehicle profile in the second position.

8. The vehicle of claim 1 wherein said at least one guide lies on an arc of a circle and extends from a location proximate the slewing gear towards the tail of the vehicle.

9. The vehicle of claim 1 including:

a second frame support coupled to the frame of the vehicle, the frame support including:

at least one arcuate beam movably coupled to the frame in a substantially horizontal plane; and

at least one guide coupled to the frame and extending inwardly from one of the longitudinal sides of the vehicle profile, wherein said at least one guide guides movement of said at least one beam of the second frame support in a substantially horizontal plane tangentially to the longitudinal direction of the vehicle so that said at least one beam of the second frame support may be drawn into the vehicle profile.

10. The vehicle of claim 9 wherein the first and second frame supports each include a pair of arcuate beams mov-

ably coupled to the frame in a substantially horizontal plane on opposite sides of the vehicle.

11. The vehicle of claim 1 further including:

means for selectively moving said at least one arcuate beam inward and outward from the first frame support.

12. The vehicle of claim 11 wherein the means for selectively moving includes:

a rope winch having a traction rope engaging said at least one beam; and

a motor coupled to the frame for driving the rope winch.

13. The vehicle of claim 11 wherein the means for selectively moving includes:

a toothed rack coupled to said at least one beam; and

a motor connected to the frame having a pinion meshing with the toothed rack for driving the toothed rack.

14. The vehicle of claim 11 wherein the means for selectively moving includes:

a chain hoist having a chain engaging said at least one beam; and

a motor fixed to the frame, wherein the motor includes a chain sprocket for driving the chain hoist.

15. A vehicle having a head, a tail and a pair of sides longitudinally extending between the head and the tail of the vehicle to form a profile of the vehicle, the vehicle comprising:

a frame;

a slewing gear disposed on the frame;

a swiveling mast built on the slewing gear;

a first frame support coupled to the frame of the vehicle, the first frame support including:

a first arcuate beam movably coupled to a first side of the frame in a substantially horizontal plane, the first arcuate beam being movable between a first position and a second position, wherein the first arcuate beam extends from the slewing gear towards the head of the vehicle outward from the profile of the vehicle in the first position and wherein the first arcuate beam is substantially within the profile of the vehicle in the second position;

a second arcuate beam movably coupled to a second opposite side of the frame in a substantially horizontal plane, the second arcuate beam being movable between a first position and a second position, wherein the second arcuate beam extends from the slewing gear towards the head of the vehicle outward from the profile of the vehicle in the first position and wherein the second arcuate beam is substantially within the profile of the vehicle in the second position.

16. The vehicle of claim 15 wherein the first arcuate beam and the second arcuate beam each include at least one guide coupled to the frame for guiding movement between the first and second positions.

17. The vehicle of claim 15 including:

a second frame support coupled to the frame of the vehicle, the second frame support including:

a first leg extending from the first side of the frame and a second leg extending from the second side of the frame, each leg being movable between a first position and a second position, wherein each leg extends from the frame towards the tail of the vehicle outward from the vehicle profile in the first position and wherein each leg is substantially withdrawn into the vehicle profile in the second position.

18. The vehicle of claim 17 wherein the first leg and the second leg each include an arcuate beam movably coupled to the frame in a substantially horizontal plane.

19. The vehicle of claim 17 wherein the first leg and the second leg each comprise rockers.

20. The vehicle of claim 15 including:

a second frame support coupled to the frame of the vehicle, the second frame support including:

a first leg extending from the first side of the frame and a second leg extending from the second side of the frame, each leg being movable between a first position and a second position, wherein each leg extends outward from the vehicle profile in a lateral fashion from the tail of the vehicle in the first position and wherein each leg is substantially withdrawn into the vehicle profile in the second position.

21. The vehicle of claim 20 wherein the first leg and the second leg each comprise draw-out transverse beams.

22. A vehicle having a head, a tail and a pair of sides longitudinally extending between the head and the tail of the vehicle to form a profile of the vehicle, the vehicle comprising:

a frame;

a slewing gear disposed on the frame;

a swiveling mast built on the slewing gear;

a first frame support coupled to the frame of the vehicle, the frame support including:

a first arcuate beam movably coupled to a first side of the frame in a substantially horizontal plane and a second arcuate beam movably coupled to a second opposite side of the frame in a substantially horizontal plane, wherein the first arcuate beam and the second arcuate beam are movable between a first position and a second position, wherein the first arcuate beam and the second arcuate beam extend from proximate the slewing gear towards the head of the vehicle outward from the profile of the vehicle in the first position and wherein the first arcuate beam and the second arcuate beam are drawn substantially within the profile of the vehicle in the second position; and

a first guide coupled to the frame for guiding movement of the first arcuate beam;

a second guide coupled to the frame for guiding movement of the second arcuate beam; and

a second frame support coupled to the frame of the vehicle, the second frame support including a first leg extending from the first side of the vehicle and a second leg extending from the second side of the vehicle, the first and second legs being movable between a first position and a second position, wherein the first and second legs extend towards the tail of the vehicle outward from the vehicle profile in the first position and wherein the first and second legs are drawn substantially within the profile of the vehicle in the second position.

23. The vehicle of claim 22 wherein the first and second legs each include:

an arcuate beam movably coupled to the frame in a substantially horizontal plane; and

a guide coupled to the frame for guiding movement of the arcuate beam between the first and second positions.

24. The vehicle of claim 22 wherein the first and second legs each comprise rockers.

25. The vehicle of claim 24 wherein the rockers are coupled to the frame proximate the slewing gear.

Inventor: Heckmann



Serial No.: 10/056,898

Appendix C - CASES CITED IN APPEAL BRIEF

1. In re Clay, 966 F.2d 656, 23 U.S.P.Q.2d 1058, 1060 (Fed. Cir. 1992)
2. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)
3. In re Oetiker, 977 F.2d 1443, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992)
4. Ex parte Skinner, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986)
5. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)
6. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

pertinent question is if the asserted claims of the '445 and '062 patents are interpreted broadly enough to cover the New Striker, would they have been allowed by the Patent Examiner over the prior art. "If not, then it would be improper to permit [the patent holder] to obtain that coverage in an infringement suit under the doctrine of equivalents." *Id.* The burden is upon the patent holder to prove that the range of equivalents it propounds would not ensnare the relevant prior art. *Id.* at 685.

The second limitation on equitable infringement is prosecution history estoppel. Such estoppel prevents a plaintiff in an action for infringement, under the doctrine of equivalents, from interpreting claims so as to include subject matter that the inventor disclaimed to obtain allowance of the claim before the Patent Office while prosecuting the application. *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 1227 USPQ 293 (Fed. Cir. 1985). Not all disclaimers result in an estoppel, however. Rather, an estoppel will be found only when the patent holder's disclaimer was required in response to an examiner's rejection. *Manassis Denzag Corp. v. Engineered Metal Prod.*, 793 F.2d 1279, 1284-85, 1230 USPQ 451 (Fed. Cir. 1986).

[3] The court is not satisfied that the New Striker and Rawl Spike perform substantially the same function, in substantially the same way, to achieve substantially the same result. Contrary to Rawl's assertions, the evidence indicates that the New Striker's holding power does not result from a three point pressure system centered around a peak and two bases. Rather, it results from a combination of four points of pressure against the hole wall and a mechanical interlock between the serrations and the wall. This is in contrast to the Rawl Spike, whose two base pressure points are equal in force to that of its peak.

The mere fact that a competing device uses a pressure point system, in and of itself, would not be an infringement of Rawl's patents. Instead, it is the way the pressure system is employed that would determine whether infringement exists. Here the New Striker employs a different pressure system than the Rawl Spike. Indeed, the New Striker functions like a combination of the *Karou* and *Carroll*, both of which Giannuzzi distinguished from his invention during the prosecution process. To interpret the New Striker's use of pressure and mechanical interlock as infringing the '445 and '062 patents would be impermissible in light of this relevant prior art.

The complaint is dismissed, and judgment shall be entered in favor of the defendant. So Ordered.

Court of Appeals, Federal Circuit

In re Clay

No. 91-1402

Decided June 10, 1992

PATENTS

1. Patentability/Validity — Obviousness — Relevant prior art — In general (\$115.0903.01)

JUDICIAL PRACTICE AND PROCEDURE

Procedure — Judicial review — Standard of review — Patents (\$410.4607.09)

Board of Patent Appeals and Interferences' decision as to whether reference in prior art is "analogous" to invention under consideration is reviewed under clearly erroneous standard, since question is one of fact; resolution of question requires determination of whether reference is from same field of endeavor as invention, regardless of problem addressed, and if not, whether reference is nonetheless reasonably pertinent to particular problem with which inventor is involved.

PATENTS

2. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (\$115.0903.03)

Patent which discloses process for reducing permeability of hydrocarbon-bearing formations, and thus improving oil production, by using gel to plug formation anomalies is not in same field of endeavor as invention of application, which uses gel to fill dead volume of tank for storing refined liquid hydrocarbon product, even though reference and application relate to petroleum industry, since reference teaches use of gel in unconfined and irregular volumes within natural oil-bearing formations in order to channel flow in desired direction, whereas application teaches use of gel in confined dead volume of storage tank, since process of reference operates in extreme conditions, whereas application process operates at ambient pressures and temperatures, and since application thus relates to storage of refined

liquid hydrocarbons, whereas reference concerns extraction of crude petroleum.

3. Patentability/Validity — Obviousness — Relevant prior art — In general (\$115.0903.01)

Prior reference is reasonably pertinent to problem addressed by inventor in patent application, even though it may be in field different from that of inventor's endeavor, if reference, by reason of matter with which it deals, logically would have commended itself to inventor's attention in considering pertinent problem.

4. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (\$115.0903.03)

Patent which discloses process for reducing permeability of hydrocarbon-bearing formations, and thus improving oil production, by using gel to plug formation anomalies is not reasonably pertinent to invention of application, which uses gel to fill dead volume of tank for storing refined liquid hydrocarbon product, since reference addresses problem of recovering crude oil from porous, permeable sedimentary rock matrix, whereas invention of application is directed to preventing loss of refined hydrocarbon product to dead volume of storage tank while preventing contamination of such product, since subterranean formation of reference is structurally and functionally dissimilar to storage tanks of patent, and since person of ordinary skill in art thus would not reasonably have expected to solve problem of dead volume in petroleum storage tanks by considering reference in question.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of Carl D. Clay, serial no. 245,083, filed April 28, 1987 (storage of refined liquid hydrocarbon product). From decision upholding examiner's rejection of all claims remaining in application, applicant appeals. Reversed.

Jack E. Ebel, Littleton, Colo. (Paul T. Melick, of counsel), for appellant.

Teddy S. Gron, associate solicitor (Fred E. McKelvey, solicitor, with him on the brief; Richard E. Schaler, of counsel), for appellee.

Before Plager, Lourie, and Clevenger, circuit judges.

Lourie, J.

Carl D. Clay appeals the decision of the United States Patent and Trademark Office,

Board of Patent Appeals and Interferences, Appeal No. 90-2262, affirming the rejection of claims 1-11 and 13 as being unpatentable under 35 U.S.C. § 103. These are all the remaining claims in application, Serial No. 245,083, filed April 28, 1987, entitled "Storage of a Refined Liquid Hydrocarbon Product." We reverse.

BACKGROUND

Clay's invention, assigned to Marathon Oil Company, is a process for storing refined liquid hydrocarbon product in a storage tank having a dead volume between the tank bottom and its outlet port. The process involves preparing a gelation solution which gels after it is placed in the tank's dead volume, the gel can easily be removed by adding to the tank a gel-degrading agent such as hydrogen peroxide. Claims 1, 8, and 11 are illustrative of the claims on appeal.

1. A process for storing a refined liquid hydrocarbon product in a storage tank having a dead volume between the bottom of said tank and an outlet port in said tank, said process comprising:

preparing a gelation solution comprising an aqueous liquid solvent, an acrylicamide polymer and a crosslinking agent containing a polyvalent metal cation selected from the group consisting of aluminum, chromium and mixtures thereof, said gelation solution capable of forming a rigid crosslinked polymer gel which is substantially insoluble and inert in said refined liquid hydrocarbon product;

placing said solution in said dead volume;

gelling said solution substantially to completion in said dead volume to produce said rigid gel which substantially fills said dead volume; and storing said refined liquid hydrocarbon product in said storage tank in contact with said gel without substantially contaminating said product with said gel and without substantially degrading said gel.

8. The process of claim 1, further comprising removing said rigid gel from said dead volume by contacting said gel with a chemical agent which substantially degrades said gel to a flowing solution.

11. The process of claim 1, wherein said gelation solution further comprises an aqueous liquid contaminant present in said dead volume which dissolves in said solution when said solution is placed in said dead volume.

Two prior art references were applied against the claims on appeal. They were U.S.

Patent 4:664,294 (Hetherington), which discloses an apparatus for displacing dead space liquid using impervious bladders, or large bags, formed with flexible membranes; and U.S. Patent 4:683,949 (Sydansk), also assigned to Clay's assignee, Marathon Oil Company, which discloses a process for reducing the permeability of hydrocarbon-bearing formations and thus improving oil production, using a gel similar to that in Clay's invention.

The Board agreed with the examiner that, although neither reference alone describes Clay's invention, Hetherington and Sydansk combined support a conclusion of obviousness. It held that anyone skilled in the art would glean from Hetherington that Clay's invention was appreciated in the prior art and solutions to that problem generally involved filling the dead space with something.

On at 3 (emphasis in original). The Board also held that Sydansk would have provided one skilled in the art with information that a gelation system would have been impervious to hydrocarbons once the system gelled. The Board combined the references, finding that the "cavities" filled by Sydansk are sufficiently similar to the "volume or void space" being filled by Hetherington for one of ordinary skill to have recognized the applicability of the gel to Hetherington.

DISCUSSION

The issue presented in this appeal is whether the Board's conclusion was correct that Clay's invention would have been obvious from the combined teachings of Hetherington and Sydansk. Although this conclusion is one of law, such determinations are made against a background of several factual inquiries, one of which is the scope and content of the prior art. *Graham v. John*

A prerequisite to making this finding is determining what is "prior art." In order to consider whether the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art, 35 U.S.C. § 103. Although § 103 does not, by its terms, define the art to which (the) subject matter [sought to be patented] pertains, this determination is frequently couched in terms of whether the art is analogous or not, i.e., whether the art is "too remote to be treated as prior art." *In re Soviet*, 769 F.2d 738, 741, 226 USPQ 771, 773 (Fed. Cir. 1985).

[1] Clay argues that the claims at issue were improperly rejected over Hetherington and Sydansk, because Sydansk is nonanalogous art. Whether a reference in the prior art is "analogous" is a fact question. *Panduit Corp. v. Dennison Mfg.*, 810 F.2d 1561, 1568 n.9, 1 USPQ2d 1593, 1597 n.9 (Fed. Cir.), cert. denied, 481 U.S. 1052 (1987). Thus, we review the Board's decision on this point under the clearly erroneous standard.

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Demitski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979).

The Board found Sydansk to be within the field of Clay's endeavor because, as the Examiner stated, "one of ordinary skill in the art would certainly glean from [Sydansk] that the rigid gel as taught therein would have a number of applications within the manipulation of the storage and processing of hydrocarbon liquids . . . (and that) the gel as taught in Sydansk would be expected to function in a similar manner as the bladders in the Hetherington patent." These findings are clearly erroneous.

[2] The PTO argues that Sydansk and Clay's inventions are part of a common endeavor — "maximizing withdrawal of petroleum stored in petroleum reservoirs." However, Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry. Sydansk teaches the use of a gel in unconfined and irregular volumes within generally underground natural oil-bearing formations to channel flow in a desired direction. Clay teaches the introduction of gel to the confined dead volume of a man-made storage tank. The Sydansk process operates in extreme conditions, with petroleum formation temperatures as high as 115°C and at significant well bore pressures. Clay's process apparently operates at ambient temperature and atmospheric pressure. Clay's field of endeavor is the storage of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand, is the extraction of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's. [3] Even though the art disclosed in Sydansk is not within Clay's field of endeavor, the reference may still properly be combined

with Hetherington if it is reasonably pertinent to the problem Clay attempts to solve. *In re Wood*, 599 F.2d at 1036, 202 USPQ at 174. A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one of the same matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference discloses the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

[4] Sydansk's gel treatment of underground formations functions to fill anomalies, so as to improve flow profiles and sweep efficiencies of injection, and production fluids through a formation, while Clay's gel functions to displace liquid product from the dead volume of a storage tank. Sydansk is concerned with plugging formation anomalies so that fluid is subsequently diverted by the gel into the formation matrix, thereby forcing by-passed oil contained in the matrix toward a production well. Sydansk is faced with the problem of recovering oil from rock, i.e., from a matrix which is porous, permeable sedimentary rock of a subterranean formation where water has channeled through formation anomalies and by-passed oil present in the matrix. Such a problem is not reasonably pertinent to the particular problem with which Clay was involved — preventing loss of stored product to tank dead volume while preventing contamination of such product. Moreover, the subterranean formation of Sydansk is not structurally similar to, does not operate under the same temperature and pressure as, and does not function like Clay's storage tanks. See *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973) ("the similarities and differences in structure and function of the invention disclosed in the references carry far greater weight [in determining analogy]"). A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous. Since Sydansk is non-analogous art, the rejection over Hetherington in view of Sydansk cannot be sustained.

CONCLUSION

For the foregoing reasons, the decision of the Board is
REVERSED.

U.S. Patent and Trademark Office
Trademark Trial and Appeal Board

In re Sharky's Drygoods Co.
Serial No. 74/017,286
Decided March 4, 1992
Released May 12, 1992

TRADEMARKS AND UNFAIR TRADE PRACTICES

1. Types of marks — Geographical and geographically misdescriptive marks (§327.09)

Examining attorney, in order to demonstrate that mark is geographically deceptive, must first establish that it is geographically deceptively misdescriptive by showing that mark in question consists of or incorporates term that denotes geographical location which is neither obscure nor remote, that there is goods/place association between goods on which mark is used and geographical place named by term, and that the goods do not, in fact, originate in that geographical place; misdescription must, in addition, be likely to affect customer's purchasing decision.

2. Types of marks — Geographical and geographically misdescriptive marks (§327.09)

Fact that Paris is well-known geographical place, that it is center for haute couture, and that applicant's goods do not come from there is not sufficient to demonstrate that "PARIS BEACH CLUB" is geographically

products so that they can be positioned to enter the general market at the end of the lives of relevant patents. At least for relatively small start-up companies like VentriX, where much of the business and technical work essential to survival is done by a small group of people, the promise by Congress of a safe haven could prove to be completely illusory if the courts permitted competitors to proceed full bore with expensive, resource-draining, and personnel-distracting litigation in the form of actions for declaratory relief. It makes little sense, and thus we assume would be inconsistent with Congress' intent, to protect companies like VentriX from suit for actual patent infringement but leave them fully exposed to declaratory relief actions whose gravamen and burdens are much the same. While the considerations discussed in the preceding paragraph are sufficient to support our decision not to exercise jurisdiction at this time over plaintiff's declaratory relief counts, the fact that these additional policy considerations cut in the same direction intensifies our resolve.

For all the reasons discussed in this section, we hereby GRANT defendants' motion to dismiss plaintiff's declaratory relief claims (Counts VIII and IX). Those Counts are ORDERED dismissed.

V. DEFENDANTS' MOTION TO DISMISS THE REMAINING STATE LAW CLAIMS (COUNTS X - XIX)

Defendants earlier moved this court to dismiss plaintiff's state law claims asserted in Counts X - XVII of plaintiff's original complaint. Defendants contended that, since the sole basis of subject matter jurisdiction over these claims was pendency to the federal question claims in Counts I - IX, the court should dismiss the state law claims if it grants defendants' motion to dismiss the federal claims in counts I - IX.

However, plaintiff has since amended its complaint. The second amended complaint now alleges a separate basis for jurisdiction under 28 U.S.C. § 1332(a) (diversity). Plaintiff also has added two new counts, including an additional federal claim (Count XVIII — Correction of Inventionship) that is not disposed of by our ruling on the applicability of the 271(e)(1) defense. Thus, we hereby DENY defendants' motion to dismiss plaintiff's state law claims.

VI. CONCLUSION

Given the dispositive effect of the 271(e)(1) defense on Counts I - IX of plaintiff's second amended complaint, this court finds that there is no just reason for delaying final judgment on those counts, despite the

remaining federal law count and the state law counts. Thus, we ORDER entry of summary judgment on Counts I - IX. IT IS SO ORDERED.

Court of Appeals, Federal Circuit

In re Vaeck

No. 91-1120

Decided October 21, 1991

PATENTS

1. Patentability/Validity — Obviousness — Combining references, (\$115.0905)

Rejection of claimed subject matter as obvious under 35 USC 103 in view of combination of prior art references requires consideration of whether prior art would have suggested to those of ordinary skill in art that they should make claimed composition or device, or carry out claimed process, and whether prior art would also have revealed that such person would have reasonable expectation of success, both suggestion and reasonable expectation of success must be founded in prior art, not in applicant's disclosure.

2. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions, (\$115.090303)

Patent and Trademark Office has failed to establish prima facie obviousness of claims for use of genetic engineering techniques for producing proteins that are toxic to insects such as larvae of mosquitoes and black flies, since prior art does not disclose or suggest expression in cyanobacteria of chimeric gene encoding insecticidally active protein, or convey to those of ordinary skill reasonable expectation of success in doing so, expression of antibiotic resistance-conferring genes in cyanobacteria, without more, does not render obvious expression of unrelated genes in cyanobacteria for unrelated purposes.

3. Patentability/Validity — Specification — Enablement, (\$115.1105)

JUDICIAL PRACTICE AND PROCEDURE

Procedure — Judicial review — Standard of review — Patents (\$410.4607.09) — Specification must, in order, to be enabling as required by 35 USC 112, first paragraph, teach person skilled in art to make and use

invention without "undue experimentation," which does not preclude some experimentation; enablement is question of law which is reviewed independently on appeal, although such determination is based upon underlying factual findings which are reviewed for clear error.

PATENTS

4. Patentability/Validity — Specification — Enablement, (\$115.1105)

Patent and Trademark Office did not err in rejecting, as non-enabling pursuant to 35 USC 112, first paragraph, claims for use of genetic engineering techniques for producing proteins that are toxic to insects such as larvae of mosquitoes and black flies, in view of relatively incomplete understanding of biology of cyanobacteria as of applicants' filing date, as well as limited disclosure by applicants of particular cyanobacterial genera operative in claimed invention, since there is no reasonable correlation between narrow disclosure in applicants' specification and broad scope of protection sought in claims encompassing gene expression in any and all cyanobacteria.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent, serial no. 07/021,405, filed March 4, 1987, by Mark A. Vaeck, Wipa Chungiatpornchai, and Lee McIntosh (hybrid genes incorporating a DNA fragment containing a gene coding for an insecticidal protein, plasmids, transformed cyanobacteria expressing such protein and method for use as a biocontrol agent). From decision rejecting claims 1-48 and 50-52 as unpatentable under 35 USC 103, and rejecting claims 1-48 and 50-51 for lack of enablement, applicants appeal. Affirmed and part reversed in part. Mayer, J., dissents with opinion.

John C. McLeod, Okemos, Mich., for appellant.

Teddy S. Gron, associate solicitor (Fred E. McKelvey, solicitor and Richard E. Schaefer, associate solicitor, with him on brief), for appellee.

Before Rich, Archer, and Mayer, circuit judges.

Rich, J.

This appeal is from the September 12, 1990 decision of the Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (Board), affirming the examiner's rejection of claims 1-48 and 50-52 of application Serial No. 07/021,405, filed March 4, 1987, titled "Hybrid Genes Incorporating a DNA Fragment Containing a Gene Coding for an Insecticidal Protein, Plasmids, Transformed Cyanobacteria Expressing Such Protein and Method for Use as a Biocontrol Agent" as unpatentable under 35 USC 103, as well as the rejection of claims 1-48 and 50-51 under 35 USC 112, first paragraph, for lack of enablement. We reverse the § 103 rejection. The § 112 rejection is affirmed in part and reversed in part.

BACKGROUND

A. The Invention

The claimed invention is directed to the use of genetic engineering techniques for production of proteins that are toxic to insects such as larvae of mosquitoes and black flies. These swamp-dwelling pests are the source of numerous human health problems, including malaria. It is known that certain species of the naturally-occurring *Bacillus* genus of bacteria produce proteins ("endotoxins") that are toxic to these insects. Prior art methods of combatting the insects involved spreading or spraying crystalline spores of the insecticidal *Bacillus* proteins over swamps. The spores were environmentally unstable, however, and would often sink to the bottom of a swamp before being consumed, thus rendering this method prohibitively expensive. Hence the need for a lower-cost method of producing the insecticidal *Bacillus* proteins in high volume, with application in a more stable vehicle.

As described by appellants, the claimed subject matter meets this need by providing for the production of the insecticidal *Bacillus* proteins within host cyanobacteria. Although both cyanobacteria and bacteria are members of the prokaryote kingdom, the

¹ Basic vocabulary and techniques for gene cloning and expression have been described in *In re O'Farrell*, 853 F.2d 894, 895-99, 7 USPQ2d 1673, 1674-77 (Fed. Cir. 1988), and are not repeated here.

² All living cells can be classified into one of two broad groups, prokaryotes and eukaryotes. The prokaryotes comprise organisms formed of cells that do not have a distinct nucleus; their DNA floats throughout the cellular cytoplasm. In contrast, the cells of eukaryotic organisms such as man, other animals, plants, protozoa, algae and yeast have a distinct nucleus wherein their DNA resides.

cyanobacteria (which in the past have been referred to as "blue-green algae") are unique among prokaryotes in that the cyanobacteria are capable of oxygenic photosynthesis. The cyanobacteria grow on top of swamps where they are consumed by mosquitos and black flies. Thus, when *Bacillus* proteins are produced within transformed cyanobacterial hosts according to the claimed invention, the presence of the insecticide in the food of the targeted insects advantageously guarantees direct uptake by the insects.

More particularly, the subject matter of the application on appeal includes a chimeric (i.e., hybrid) gene comprising (1) a gene derived from a bacterium of the *Bacillus* genus whose product is an insecticidal protein, united with (2) a DNA promoter effective for expressing the *Bacillus* gene in a cyanobacterium, so as to produce the claimed insecticidal protein.

The claims on appeal are 1-48 and 50-52, all claims remaining in the application.

Claim 1 reads:
1. A chimeric gene capable of being expressed in cyanobacteria cells comprising:
(a) a DNA fragment comprising a promoter region which is effective for expression of a DNA fragment in a cyanobacterium; and
(b) at least one DNA fragment coding for an insecticidally active protein produced by a *Bacillus* strain, or coding for an insecticidally active truncated form of the above protein or coding for a protein having substantial sequence homology to the active protein.

The DNA fragments being linked so that the gene is expressed.
Claims 2-15, which depend from claim 1, recite preferred *Bacillus* species, promoters, and selectable markers. Independent claim 16 and claims 17-31 which depend therefrom directed to a hybrid plasmid vector which

"transformed" cyanobacteria are those that have successfully taken up the foreign *Bacillus* DNA such that the DNA information has become a permanent part of the host cyanobacteria to be replicated as new cyanobacteria are generated.

"Expression" of a gene refers to the production of the protein which the gene encodes; more specifically, it is the process of transferring information from a gene (which consists of DNA) via messenger RNA to ribosomes where a specific protein is made.

In the context of the claimed invention, "selectable markers" or "marker genes" refer to antibiotic-resistance conferring DNA fragments attached to the gene being expressed, which facilitate the selection of successfully transformed cyanobacteria.

includes the chimeric gene of claim 1. Claim 32 recites a bacterial strain. Independent claim 33 and claims 34-48 which depend therefrom recite a cyanobacterium which expresses the chimeric gene of claim 1. Claims 50-51 recite an insecticidal composition. Claim 52 recites a particular plasmid that appellants have deposited.

B. Appellants' Disclosure

In addition to describing the claimed invention in generic terms, appellants' specification discloses two particular species of *Bacillus* (*B. thuringiensis*, *B. sphaericus*) as sources of insecticidal protein; and nine genera of cyanobacteria (*Synechocystis*, *Anacystis*, *Synechococcus*, *Agmenellum*, *Aphanocapsa*, *Gloeocapsa*, *Nostoc*, *Anabaena*, and *Fremyella*) as useful hosts.

The working examples relevant to the claims on appeal detail the transformation of a single strain of cyanobacteria, i.e., *Synechocystis* 6803. In one example, *Synechocystis* 6803 cells are transformed with a plasmid comprising (1) a gene encoding a particular insecticidal protein ("B1.8") from *Bacillus thuringiensis* var. *israelensis*, linked to (2) a particular promoter, the PL promoter from the bacteriophage Lambda (a virus of *E. coli*). In another example, a different promoter, i.e., the *Synechocystis* 6803 promoter for the rubisco operon, is utilized instead of the Lambda PL promoter.

C. The Prior Art

A total of eleven prior art references were cited and applied, in various combinations, against the claims on appeal.

The focus of Dzelzkalns', the primary reference cited against all of the rejected claims, is to determine whether chloroplast promoter sequences can function in cyanobacteria. To that end Dzelzkalns discloses the expression in cyanobacteria of a chimeric gene comprising a chloroplast promoter sequence fused to a gene encoding the enzyme chloramphenicol acetyl transferase (CAT).¹² Importantly, Dzelzkalns teaches the use of the CAT gene as a "marker" gene; this use of antibiotic resistance-conferring genes for selection purposes is a common technique in genetic engineering.

¹² *Nucleic Acids Res.* 9:17 (1984).

¹³ Chloramphenicol is an antibiotic; CAT is an enzyme which destroys chloramphenicol and thus imparts resistance thereto.

Sekar I,¹⁴ Sekar II,¹⁵ and Ganesan¹⁶ collectively disclose expression of genes encoding certain *Bacillus* insecticidal proteins in the bacterial hosts *B. megaterium*, *B. subtilis* and *E. coli*.

Friedberg¹⁷ discloses the transformation of the cyanobacterium *Anacystis nidulans* R2 by a plasmid vector comprising the O₂ PL operator-promoter region and a temperature-sensitive repressor gene of the bacteriophage Lambda. While the cyanobacteria are attractive organisms for the cloning of genes involved in photosynthesis, Friedberg states, problems may still be encountered, such as suboptimal expression of the cloned gene, detrimental effects on cell growth of overexpressed, highly hydrophobic proteins, and rapid turnover of some gene products. To address these problems, Friedberg teaches the use of the disclosed Lambda regulatory signals in plasmid vehicles which, it states, have "considerable potential for use as vectors the expression of which can be controlled in *Anacystis*."

Miller¹⁸ compares the initiation specificities *in vitro* of DNA-dependent RNA polymerases¹⁹, purified from two different species of cyanobacteria (*Fremyella diplostraphon* and *Anacystis nidulans*), as well as from *E. coli*.

Nierwicz-Bauer²⁰ identifies in the cyanobacterium *Anabaena* 7120 the start site for transcription of the gene encoding *rbcL*, the large subunit of the enzyme ribulose-1, 5-bisphosphate carboxylase. It reports that the nucleotide sequence 14-8 base pairs preceding the transcription start site "resembles a good *Escherichia coli* promoter," but that the sequence 35 base pairs before the start site does not.

Chavaval²¹ discloses host-vector systems for gene cloning in the cyanobacterium *Synechocystis* 6803, in which the antibiotic resistance-conferring *neo* gene is utilized as a selectable marker.

Reiss²² studies expression in *E. coli* of various proteins formed by fusion of certain foreign DNA sequences with the *neo* gene. Kolowsky²³ discloses chimeric plasmids designed for transformation of the cyanobacterium *Synechococcus* R2, comprising an antibiotic-resistant gene linked to chromosomal DNA from the *Synechococcus* cyanobacterium.

Barnes, United States Patent No. 4,695,455, is directed to the treatment with stabilizing chemical reagents of pesticides produced by expression of heterologous genes (such as those encoding *Bacillus* proteins) in host microbial cells such as *Pseudomonas* bacteria. The host cells are killed by this treatment, but the resulting pesticidal compositions exhibit prolonged toxic activity when exposed to the environment of target pests.

D. The Grounds of Rejection

1. The § 103 Rejections

Claims 1-6, 16-21, 33-38, 47-48 and 52 (which include all independent claims in the application) were rejected as unpatentable under 35 USC 103 based upon Dzelzkalns in view of Sekar I or Sekar II and Ganesan. The examiner stated that Dzelzkalns discloses a chimeric gene capable of being highly expressed in a cyanobacterium, said gene comprising a promoter region effective for expression in a cyanobacterium, operably linked to a structural gene encoding CAT. The examiner acknowledged that the chimeric gene and transformed host of Dzelzkalns differ from the claimed invention in that the former's structural gene encodes CAT rather than insecticidally active protein. However, the examiner pointed out, Sekar I, Sekar II, and Ganesan teach genes encoding insecticidally active proteins produced by *Bacillus*, and the advantages of expressing such genes in heterologous hosts to obtain larger quantities of the protein. The examiner contended that it would have been obvious to one of ordinary skill in the art to substitute the *Bacillus* genes taught by Sekar I, Sekar II, and Ganesan for the CAT gene in the vectors of Dzelzkalns in order to obtain high level expression of the *Bacillus* genes in the transformed cyanobacteria. The examiner further contended that it would have been obvious to use cyanobacteria as heterologous hosts for expression of the claimed genes due to the ability of cyanobacteria to serve as transformed hosts for the

²⁰ *Gene* 211 (1984).

²¹ *Gene* 289 (1984).

²² Denotes different species or organism.

expression of heterologous genes. In the absence of evidence to the contrary, the examiner contended, the invention as a whole was *prima facie* obvious.

Additional rejections were entered against various groups of dependent claims which we need not address here. All additional rejections were made in view of Dzelzkalns in combination with Sekar I, Sekar II, and Ganesan, and further in view of other references discussed in Part C above.

The Board affirmed the § 103 rejections, basically adopting the examiner's Answer as its opinion while adding a few comments. The legal conclusion of obviousness does not require absolute certainty; the Board added, but only a reasonable expectation of success, citing *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988). In view of disclosures of the prior art, the Board included, one of ordinary skill in the art would have been motivated by a reasonable expectation of success to make the substitution suggested by the examiner.

2. The § 112 Rejection

The examiner also rejected claims 1-48 and 50-51 under 35 USC 112, first paragraph, on the ground that the disclosure was enabling only for claims limited in accordance with the specification as filed. Citing *Manual of Patent Examining Procedure* (MPEP) provisions 706.03(n) and (2) as support, the examiner took the position that undue experimentation would be required of the art worker to practice the

* MPEP 706.03(n), "Correspondence of Claim and Disclosure," provides in part:

In chemical cases, a claim may be so broad as to not be supported by [the] disclosure; in which case it is rejected as unwarranted by the disclosure.

MPEP 796.03(2), "Undue Breadth," provides in part:

[I]n applications directed to inventions in arts where the results are unpredictable, the disclosure of a single species usually does not provide an adequate basis to support generic claims. *In re Sol*, 1938 C.D. 723; 497 O.G. 546. This is because, in arts such as chemistry it is not obvious from the disclosure of one species, what other species will work. *In re Deschfield*, 1940 C.D. 331; 518 O.G. 255 gives this general rule: "It is well settled that in cases involving chemicals and chemical compounds, which differ radically in their properties it must appear in an applicant's specification either by the enumeration of a sufficient number of the members of a group or by other appropriate language, that the chemicals or chemical combinations included in the claims are capable of accomplishing the desired result."

claimed invention, in view of the unpredictability in the art, the breadth of the claims, the limited number of working examples, and the limited guidance provided in the specification. With respect to unpredictability, the examiner stated that

[t]he cyanobacteria comprise a large and diverse group of photosynthetic bacteria including large numbers of species in some 150 different genera including *Synechocystis*, *Anacystis*, *Synechococcus*, *Agmenellum*, *Nostoc*, *Anabaena*, etc. The molecular biology of these organisms has only recently become the subject of intensive investigation and this work is limited to a few genera. Therefore the level of unpredictability regarding heterologous gene expression in this large, diverse and relatively poorly studied group of prokaryotes is high.

The Board affirmed, noting that "the limited guidance in the specification, considered in light of the relatively high degree of unpredictability in this particular art, would not have enabled one having ordinary skill in the art to practice the broad scope of the claimed invention without undue experimentation." *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970).

OPINION

A. Obviousness

We first address whether the PTO erred in rejecting the claims on appeal as *prima facie* obvious within the meaning of 35 USC 103. Obviousness is a legal question which this court independently reviews, though based upon underlying factual findings which we review under the clearly erroneous standard. *In re Woodruff*, 919 F.2d 1575, 1577, 16 USPQ2d 1934, 1935 (Fed. Cir. 1990).

[I]f where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires: *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. See *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *Id.*

[2] We agree with appellants that the PTO has not established the *prima facie* obviousness of the claimed subject matter. The prior art simply does not disclose or suggest the expression in cyanobacteria of a chimeric gene encoding an insecticidally active protein, or convey to those of ordinary skill a reasonable expectation of success in doing so. More particularly, there is no suggestion in Dzelzkalns, the primary reference cited against all claims, of substituting in the disclosed plasmid a structural gene encoding *Bacillus* insecticidal proteins for the CAT gene utilized for selection purposes. The expression of antibiotic resistance-conferring genes in cyanobacteria, without more, does not render obvious the expression of unrelated genes in cyanobacteria for unrelated purposes.

The PTO argues that the substitution of insecticidal *Bacillus* genes for CAT marker genes in cyanobacteria is suggested by the secondary references Sekar I, Sekar II, and Ganesan, which collectively disclose expression of genes encoding *Bacillus* insecticidal proteins in two species of host *Bacillus* bacteria (*B. megaterium* and *B. subtilis*) as well as in the bacterium *E. coli*. While these references disclose expression of *Bacillus* genes encoding insecticidal proteins in certain transformed bacterial hosts, nowhere do these references disclose or suggest expression of such genes in transformed cyanobacterial hosts.

To remedy this deficiency, the PTO emphasizes similarity between bacteria and cyanobacteria, namely, that these are both prokaryotic organisms, and argues that this fact would suggest to those of ordinary skill the use of cyanobacteria as hosts for expression of the claimed chimeric genes. While it is true that bacteria and cyanobacteria are now both classified as prokaryotes, that fact alone is not sufficient to motivate the art worker as the PTO contends. As the PTO concedes, cyanobacteria and bacteria are not identical; they are classified as two separate divisions of the kingdom Prokaryotae. Moreover, it is only in recent years that the biology of cyanobacteria has been clarified, as evidenced by references in the prior art to "blue-green algae." Such evidence of recent uncertainty regarding the biology of cyano-

bacteria tends to rebut, rather than support, the PTO's position that one would consider the cyanobacteria effectively interchangeable with bacteria as hosts for expression of the claimed gene.

At oral argument the PTO referred to additional secondary references, not cited against any independent claim (i.e., Friedberg, Miller, and Nierzwicki-Bauer), which it contended disclose certain amino acid sequence homology between bacteria and cyanobacteria. The PTO argued that such homology is a further suggestion to one of ordinary skill to attempt the claimed invention. We disagree. As with the Dzelzkalns, Sekar I, Sekar II, and Ganesan references discussed above, none of these additional references disclose or suggest that cyanobacteria could serve as hosts for expression of genes encoding *Bacillus* insecticidal proteins. In fact, these additional references suggest as much about differences between cyanobacteria and bacteria as they do about similarities. For example, Nierzwicki-Bauer reports that a certain nucleotide sequence (i.e., the -10 consensus sequence) in a particular cyanobacterium resembles an *E. coli* promoter, but that another nearby nucleotide sequence (the -35' region) does not. While Miller speaks of certain promoters of the bacteriophage Lambda that are recognized by both cyanobacterial and *E. coli* RNA polymerases, it also discloses that these promoters exhibited differing strengths when exposed to the different polymerases. Differing sensitivities of the respective polymerases to an inhibitor are also disclosed, suggesting differences in the structures of the initiation complexes.

The PTO asks us to agree that the prior art would lead those of ordinary skill to conclude that cyanobacteria are attractive hosts for expression of any and all heterologous genes. Again, we can not. The relevant prior art does indicate that cyanobacteria are attractive hosts for expression of both native and heterologous genes involved in photosynthesis (not surprisingly, for the capability of undergoing oxygenic photosynthesis is what makes the cyanobacteria unique among prokaryotes). However, these references do not suggest that cyanobacteria would be equally attractive hosts for expression of unrelated heterologous genes, such as the claimed genes encoding *Bacillus* insecticidal proteins.

In *O'Farrell*, this court affirmed an obviousness rejection of a claim to a method for

producing a "predetermined protein in a stable form" in a transformed bacterial host. 853 F.2d at 895, 7 USPQ2d at 1674. The cited references included a prior art publication (the Polisky reference) whose three authors included two of the three coinventor-appellants. The main difference between the prior art and the claim at issue was that in Polisky, the heterologous gene was a gene for ribosomal RNA, while the claimed invention substituted a gene coding for a predetermined protein. *Id.* at 901, 7 USPQ2d at 1679. Although, as the appellants therein pointed out, the ribosomal RNA gene is not normally translated into protein, Polisky mentioned preliminary evidence that the transcript of the ribosomal RNA gene was translated into protein, and further predicted that if a gene coding for a protein were to be substituted, extensive translation might result. *Id.* We thus affirmed, explaining that the prior art explicitly suggested the substitution that is the difference between the claimed invention and the prior art, and presented preliminary evidence suggesting that the [claimed] method could be used to make proteins.

Polisky contained detailed enabling methodology for practicing the claimed invention, a suggestion to modify the prior art to practice the claimed invention, and evidence suggesting that it would be successful.

Id. at 901-02, 7 USPQ2d at 1679-80. In contrast with the situation in *O'Farrell*, the prior art in this case offers no suggestion, explicit or implicit, of the substitution that is the difference between the claimed invention and the prior art. Moreover, the "reasonable expectation of success" that was present in *Farrell* is not present here. Accordingly, we reverse the § 103 rejections.

B. Enablement

[3] The first paragraph of 35 USC 112 requires, *inter alia*, that the specification of a patent enable any person skilled in the art to which it pertains to make and use the claimed invention. Although the statute does not say so, enablement requires that the specification teach those in the art to make and use the invention without "undue experimentation." *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). That some experimentation may be required is not fatal; the issue is whether the amount

of experimentation required is "undue." *Id.* at 736-37, 8 USPQ2d at 1404. Enablement, like obviousness, is a question of law which we independently review, although based upon underlying factual findings which we review for clear error. See *id.* at 735, 8 USPQ2d at 1402.

In response to the § 112 rejection, appellants assert that their invention is "pioneering," and that this should entitle them to claims of broad scope. Narrower claims would provide no real protection, appellants argue, because the level of skill in this art is so high, art workers could easily avoid the claims. Given the disclosure in their specification, appellants contend that any skilled microbiologist could construct vectors and transform many different cyanobacteria, using a variety of promoters and *Bacillus* DNA, and could easily determine whether or not the active *Bacillus* protein was successfully expressed by the cyanobacteria.

The PTO made no finding on whether the claimed invention is indeed "pioneering," and we need not address the issue here. With the exception of claims 47 and 48, the claims rejected under § 112 are not limited to any particular genus or species of cyanobacteria. The PTO's position is that the cyanobacteria are a diverse and relatively poorly studied group of organisms, comprising some 150 different genera, and that heterologous gene expression in cyanobacteria is "unpredictable." Appellants have not effectively disputed these assertions. Moreover, we note that only one particular species of cyanobacteria is employed in the working examples of appellants' specification, and only nine genera of cyanobacteria are mentioned in the entire document.

[4] Taking into account the relatively incomplete understanding of the biology of cyanobacteria as of appellants' filing date, as well as the limited disclosure by appellants of particular cyanobacterial genera operative in the claimed invention, we are not persuaded that the PTO erred in rejecting claims 1-46 and 50-51 under § 112, first paragraph. There is no reasonable correlation between the narrow disclosure in appellants' specification and the broad scope of protection sought in the claims encompassing gene expression in any and all cyanobacteria. See *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) (the first paragraph of § 112 requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification).

tion).² Accordingly, we affirm the § 112 rejection as to those claims.

In so doing we do not imply that patent applicants in art areas currently denominated as "unpredictable" must never be allowed generic claims encompassing more than the particular species disclosed in their specifications. It is well settled that patent applicants are not required to disclose every species encompassed by their claims, even in an unpredictable art. *In re Angstadt*, 537 F.2d 498, 502-03, 190 USPQ 214, 218 (CCPA 1976). However, there must be sufficient disclosure, either through illustrative examples or terminology,³ to teach those of ordinary skill how to make and how to use the invention as broadly as it is claimed. This means that the disclosure must adequately guide the art worker to determine, without undue experimentation, which species among all those encompassed by the claimed genus possess the disclosed utility. Where, as here, a claimed genus represents a diverse and relatively poorly understood group of microorganisms, the required level of disclosure will be greater than, for example, the disclosure of an invention involving a "predictable" factor such as a mechanical or electrical element. See *Fisher*, 427 F.2d at 839, 166 USPQ at 24. In this case, we agree with the PTO that appellants' limited disclosure does not enable one of ordinary skill to make and use the invention as now recited in claims 1-46 and 50-51 without undue experimentation.

Remaining dependent claim 47 recites a cyanobacterium which expresses the chimera gene of claim 1, wherein the cyanobacterium is not based upon a post-filing date state of the art, *in re Hogan*, 539 F.2d 595, 605-07, 194 USPQ 527, 536-38 (CCPA 1977). See also *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 USPQ2d 1461, 1464 (Fed. Cir. 1989) (citing *Hogan*); *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 953-58, 15 USPQ2d 1039, 1047-48 (Fed. Cir. 1990) (directing district court, on remand, to consider effect of *Hogan* and *United States Steel* on the enablement analysis of *Fisher*); *cert. denied*, U.S. _____, 111 S. Ct. 1434 (1991). We therefore do not consider the effect of *Hogan* and its progeny on *Fisher*'s analysis of whether an inventor should be allowed to "dominate the future patentable inventions of others." *Fisher*, 427 F.2d at 839, 166 USPQ at 24.

um is selected from among the genera *Anacystis* and *Synechocystis*. Claim 48, which depends from claim 47, is limited to the cyanobacterium *Synechocystis* 6803. The PTO did not separately address these claims, nor indicate why they should be treated in the same manner as the claims encompassing all types of cyanobacteria. Although these claims are not limited to expression of genes encoding particular *Bacillus* proteins, we note what appears to be an extensive understanding in the prior art of the numerous *Bacillus* proteins having toxicity to various insects. The rejection of claims 47-48 under § 112 will not be sustained.

CONCLUSION

The rejection of claims 1-48 and 50-52 under 35 USC 103 is reversed. The rejection of claims 1-46 and 50-51 under 35 USC 112, first paragraph, is affirmed and the rejection of claims 47 and 48 thereunder is reversed. AFFIRMED-IN-PART, REVERSED-IN-PART

Mayer, J., dissenting.

An appeal is not a second opportunity to try a case or prosecute a patent application, and we should not allow parties to "undertake to retry the entire case on appeal." *Perini America, Inc. v. Paper Converting Machine Co.*, 833 F.2d 581, 584, 4 USPQ2d 1621, 1624 (Fed. Cir. 1987); *Eaton Corp. v. Appliance Valves Corp.*, 790 F.2d 874, 877, 229 USPQ 668, 671 (Fed. Cir. 1986). But that is precisely what the court has permitted here. The PTO conducted a thorough examination of the prior art surrounding this patent application and concluded the claims would have been obvious. The board's decision based on the examiner's answer which comprehensively explains the rejection is persuasive and shows how the evidence supports the legal conclusion that the claims would have been obvious. Yet, the court ignores all this and conducts its own examination, if you will, as though the examiner and board did not exist. Even if I thought this opinion were more persuasive than the board's, I could not join it because it misconceives the role of the court.

The scope and content of the prior art, the similarity between the prior art and the claims, the level of ordinary skill in the art, and what the prior art teaches are all questions of fact. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966); *Jurgens v. McKay*, 927 F.2d 1552, 1560, 18 USPQ2d 1031, 1037 (Fed. Cir. 1991). And "[w]here there are two permissible views of

the evidence, the factfinder's choice between them cannot be clearly erroneous." *Anderson v. City of Bessemer City*, 470 U.S. 564, 574 (1985). The mere denomination of obviousness as a question of law does not give the court license to decide the factual matters afresh and ignore the requirement that they be respected unless clearly erroneous. *In re Woodruff*, 919 F.2d 1575, 11577, 16 USPQ2d 1934, 1935 (Fed. Cir. 1990). *In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1057 (Fed. Cir. 1990). There may be more than one way to look at the prior art, but on this record we are bound by the PTO's interpretation of the evidence because it is not clearly erroneous and its conclusion is unassailable. I would affirm on that basis.

Court of Appeals, Federal Circuit

Biocraft Laboratories, Inc. v. International Trade Commission

Nos. 91-1153, 1208

Decided October 17, 1991

PATENTS

1. U.S. International Trade Commission — Remedies (\$355,007)

JUDICIAL PRACTICE AND PROCEDURE

Procedure — Settlement agreements; consent decrees (\$410,43)

REMEDIES

Non-monetary and injunctive — Equitable relief — Preliminary injunctions — Bond (\$505,070,703)

International Trade Commission abused its discretion by refusing to release bond posted by respondent to 19 USC, 1337 complaint in compliance with temporary cease and desist order, even though respondent made sales of infringing product during effective period of order, since complainant authorized sales; in question and agreed to return of bond as part of settlement agreement with respondent, since bond provisions, under terms of order, do not apply to sales authorized by complainant, and since public interest in vindicating rights of patentees, as well as complainant's interest in offsetting competitive advantage respondent obtained by importing infringing product, were satisfied by complainant's agreement to return of

bond, and thus would not be furthered by retention of bond by ITC.

Appeal from the U.S. International Trade Commission.

U.S. International Trade Commission, investigation no. 337-TA-293, instituted in response to complaint of Bristol-Myers Co. now Bristol-Myers Squibb Co., against, inter alia, Biocraft Laboratories, Inc., for violation of Tariff Act's Section 337, 19 USC 1337. From order denying in part respondent's request for return or cancellation of two bonds posted in compliance with temporary cease and desist order, and from order denying respondent's request for reconsideration of prior order, respondent appeals. Reversed.

Prior decision, 15 USPQ2d 1258.

Marc S. Gross of Bryan, Cave, McPheeters & McRoberts (Michael R. Biggers, Elizabeth C. Carver, David A. Roodman, and Elizabeth M. Garbhard, on brief), New York, N.Y., for appellant.

Marc A. Bernstein (Lyn Schlitt, general counsel, and James A. Toupin, assistant general counsel, on brief), for appellee.

Before Skelton, senior circuit judge, and Newman and Lourie, circuit judges.

Lourie, J.

This is a consolidated appeal from (1) an order of the United States International Trade Commission issued November 14, 1990, in *Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, No. 91-1153, denying in part Biocraft Laboratories, Inc.'s request for return or cancellation of two bonds; and (2) an order of the Commission issued January 11, 1991, Inv. No. 337-TA-293, No. 91-1208, denying Biocraft's request for reconsideration of the prior order. Because we conclude that the Commission's denial of Biocraft's requests was an abuse of discretion, we reverse.

BACKGROUND

This appeal stems from an investigation begun by the Commission in response to a complaint and motion for temporary relief filed by the Bristol-Myers Company on February 1, 1989. In the complaint, Bristol

The Bristol-Myers Company has since become the Bristol-Myers Squibb Company.

alleged that Biocraft, among other firms, was violating section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, by importing and selling crystalline cefadroxil monohydrate (cefadroxil), an antibiotic covered by Bristol's U.S. Patent 4,504,657 ("the '657 patent"). Biocraft was named one of the respondents in the Commission's investigation. After an initial determination denying Bristol's motion for temporary relief on May 13, 1989, and a subsequent refusal to modify or vacate the initial determination, this court determined that the validity of the '657 patent was likely to be sustained and reversed the Commission's determination. *Bristol-Myers Co. v. United States Int'l Trade Commission*, 15 USPQ2d 1258 (Fed. Cir. 1989) (the Commission exceeded its discretionary authority, committed an error of law, and seriously misjudged the evidence by refusing to grant temporary relief under 19 U.S.C. § 1337 (c)(3) where there was reason to believe that there was a violation of section 337).

On January 10, 1990, the Commission issued a temporary cease and desist order against Biocraft. Paragraph III of the Order listed the conduct prohibited by Biocraft, stating that

Respondent shall not market, distribute, offer for sale, sell, or otherwise transfer in the United States imported crystalline cefadroxil monohydrate that infringes claim 1 of U.S. Letters Patent 4,504,657, except under license of the patent owner.

The Order required that Biocraft post a bond with the Commission to allow the sale of previously imported cefadroxil. Specifically, Paragraph XI of the Order stated:

With respect to crystalline cefadroxil monohydrate imported prior to January 10, 1990, the conduct prohibited by paragraph III of this Order may be continued during the period in which this order is in effect subject to Respondent posting a bond in the amount of sixty-eight (68) percent of the entered value of crystalline cefadroxil monohydrate capsules or bulk powder in question. *This bond provision does not apply to conduct which is otherwise permitted by paragraph IV of this Order.*

(Emphasis added). Paragraph XI further stated the conditions for forfeiture or release of the bond: The conduct specifically al-

lowed by Biocraft is recited in Paragraph IV, which provides that

Injunctive provisions of this Order, specific conduct otherwise prohibited by the terms of this Order shall be permitted if, in a written instrument, such specific conduct is licensed or authorized by Complainant or related to the importation or sale of crystalline cefadroxil monohydrate thereof by or for the United States.

(Emphasis added). Biocraft did not appeal this order, but pursuant thereto, posted two bonds with the Commission, on January 19 and January 25, 1990, totalling \$705,000.

The Commission concluded its section 337 investigation on March 15, 1990, issuing a permanent cease and desist order against Biocraft and determining that the '657 patent was valid and enforceable and had been infringed. Biocraft did not appeal this decision. The permanent relief order became final on May 14, 1990, at the end of the 60-day period in which the President could have disapproved the Commission's order.

On March 29, 1990, Bristol and Biocraft settled their separate district court litigation concerning validity and infringement of the '657 patent. The settlement agreement required Biocraft to pay Bristol \$21,000,000. Additionally, the agreement provided that

Bristol-Myers will, if requested by Biocraft, join in any petition by Biocraft to obtain a return or discharge of the bond posted by Biocraft with the ITC, and Bristol-Myers will state that it is joining in and/or supporting such request as a result of a settlement with Biocraft.

Subsequently, on April 23, 1990, Biocraft requested that the Commission return the bonds. Pursuant to the settlement agreement, Bristol submitted a letter joining Biocraft's petition. The Commission investigative attorney opposed the petition.

tion of Investigation No. 337-TA-293, unless the U.S. Court of Appeals for the Federal Circuit, in a final judgment, reverses any Commission final determination and order as to Respondent on appeal, or unless Respondent exports the products subject to this bond or destroys them and provides certification to that effect satisfactory to the Commission.

This bond is to be released in the event the President disapproves this Order and no subsequent order is issued by the Commission and approved, or not disapproved, by the President, upon service on Respondent of an Order issued by the Commission based upon application therefor made by Respondent to the Commission. See 19 U.S.C. § 1337(c)(3).

cluded, using this date, that a mere three month delay in bringing suit was not unreasonable, and that prejudice also was absent because appellants had entered into the great majority of their commitments in connection with the movie by March 3. According to Allied and New Line, however, King knew everything he needed to know to assert his rights by October 1991, when a copy of the screenplay (with credits) was obtained. Appellants argue, therefore, that October 1991 is the proper time from which to consider the laches question, and note that many commitments were made, and much money expended, after that time.

The issue of laches is committed to the discretion of the district court, *see Dickey v. Alcoa Steamship Co.*, 641 F.2d 81, 82 (2d Cir. 1981) (citations omitted), and we see no abuse of that discretion here. King could not be certain about what the film would contain — the film credits lying at the heart of this dispute — until he actually viewed a copy of the film. Indeed, in the very same letter of October 21 in which he acknowledged having the screenplay, Kramer specifically complained that he had not yet seen the tentative film credits. Accordingly, October 1991 does not seem to us to be a useful date at which to draw a baseline. *See Gilliam*, 538 F.2d at 18, 25 (Monty Python group feared in early September that programs could be edited by television network, and first of programs so edited aired in early October, but no laches where the group did not actually see tape of the edited program until late November, objected to network promptly thereafter, and commenced suit after discussions failed); *see also Hogan*, 789 F.2d at 164.

[4] Even if the October 1991 date were to be used, we would not be willing to say that King unreasonably delayed in initiating this suit, in light of his conduct and the history of the parties prior to commencement of the suit. As mentioned previously, King objected to the possessory credit to Allied as soon as he learned of the film in October 1991. He attempted at that time to obtain the screenplay, tentative credits, and a copy of the movie. He continued to voice his objections to what seemed planned by appellants and attempted to become fully informed and resolve the matter. Even taking into account the March 3 letter to Holston, King did not encourage or acquiesce in the use of a possessory credit. *Compare Southside Fair Housing*, 928 F.2d at 1355 (14 month delay in bringing suit; laches established where plaintiffs either supported actions later sued upon or "essentially stood mute" in "protracted silence").

Court of Appeals, Federal Circuit

In re Oetiker

No. 91-1026

Decided October 13, 1992

PATENTS

1. Practice and procedure in Patent and Trademark Office — Prosecution — In general (§110.0901)

Patentability/Validity — Obviousness — In general (§115.0901)

"Prima facie" case is procedural tool of patent examination which allocates burdens of going forward as between examiner and applicant; examiner bears initial burden, on review of prior art or on any other ground, of presenting prima facie case of unpatentability, and if that burden is met, burden of coming forward with evidence or argument shifts to applicant, and after applicant submits such evidence in response, patentability is determined on totality of record, by preponderance of evidence with due consideration to persuasiveness of argument.

2. Practice and procedure in Patent and Trademark Office — Board of Patent Appeals and Interferences — In general (§110.1101)

Board of Patent Appeals' and Interferences, in reviewing examiner's decision on appeal, must necessarily weigh all evidence and argument, and board's observation that examiner made prima facie case of unpatentability is not improper, as long as ultimate determination of patentability is made on entire record.

3. Practice and procedure in Patent and Trademark Office — Prosecution — In general (§110.0901)

Patentability/Validity — Obviousness — In general (§115.0901)

Concept of "prima facie" case of obviousness, which places initial burden on examiner, is of broad applicability and is not limited to chemical practice; that prima facie case may be established, or rebutted, by different forms of evidence in various technologies does not restrict concept to any particular field of technology.

4. Patentability/Validity — Obviousness — Relevant prior art — In general (§115.0903.01)

Patentability/Validity — Obviousness — Combining references (§115.0905)

Prior art reference, in order to be relied upon as basis for rejecting applicant's invention, must either be in field of applicant's endeavor or, if not, be reasonably pertinent to particular problem with which inventor was concerned; combination of elements from non-analogous sources, in manner that reconstructs applicant's invention only with benefit of hindsight, is insufficient to present prima facie case of obviousness.

5. Patentability/Validity — Obviousness — In general (§115.0901)

Simplicity of invention is not itself inimical to patentability.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent, no. 06/942,694, filed by Hans Oetiker. From decision holding claims unpatentable, applicant appeals. Reversed; Nies, C.J., and Plager, J., concurring in separate opinions.

Paul M. Craig, Jr., Washington, D.C., for appellant.

John W. Dewhirst (Fred E. McKelvey, solicitor and Robert D. Edmonds, associate solicitor, with him on brief), for appellee. Before Nies, chief judge, and Newman and Plager, circuit judges.

Newman, J.

Hans Oetiker appeals the decision of the United States Patent and Trademark Office Board of Patent Appeals and Interferences, holding unpatentable claims 1-14 and 6-21, all of the claims in patent application No. 06/942,694. Oetiker appeals on procedural and substantive grounds.

PROCEDURE Background

All of the claims were finally rejected for obviousness in terms of 35 U.S.C. §103. The

¹ *Ex parte Oetiker*, No. 89-2230 (Bd. Pat. App. & Interf. May 31, 1990; on reconsideration, August 23, 1990).

Board, upholding the rejection, stated that "the examiner has . . . established a *prima facie* case of obviousness . . . which is rebutted by any objective evidence of 'non-obviousness'." Oetiker stated that this Board holding was the first rejection of his claims for being "*prima facie* obvious", and filed rebuttal evidence with a petition for reconsideration. The Board declined to consider the new evidence or change its decision.

Oetiker states that a holding of *prima facie* obviousness means, in patent examination, that the claimed invention is subject to a rebuttable presumption of obviousness; that is, if the applicant can provide evidence, such evidence in support of unobviousness, and argument in support of unobviousness, such evidence and argument will be considered, and the question of patentability will be decided on the entire record. Oetiker states that a rejection made in the words "*prima facie* obvious" is understood by patent examiners and practitioners as an invitation to provide such rebuttal evidence.

Thus Oetiker argues that a holding by the Board of *prima facie* obviousness is a new ground of rejection, for during prosecution the examiner did not reject the claims in these words. Treating it as such, Oetiker offered affidavit evidence not previously filed, and requested reconsideration on the basis of this new evidence, or remand to the examiner for this purpose, in accordance with 37 C.F.R. §1.196(b).

When the Board makes a new rejection of an appealed claim, the appellant may exercise either of the following two options:

(1) The appellant may submit a showing of facts . . . and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner.

(2) The appellant may have the case reconsidered under §1.197(b) by the Board . . . upon the same record. The Board on reconsideration granted neither of the options of §1.196(b), stating that it had not made a new rejection.

At argument before this court the Commissioner's counsel suggested that Oetiker could refile his patent application, pay a new fee, and obtain review of this new evidence in a new examination. Oetiker states that he was entitled to a complete examination, and did not get it.

Discussion

[1] The *prima facie* case is a procedural tool of patent examination, allocating the burdens of going forward as between exam-

iner and applicant. *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990). The term "*prima facie* case" refers only to the initial examination step. *In re Plasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). As discussed in *In re Plasecki*, the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence of argument shifts to the applicant.

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record to the preponderance of evidence with due consideration to persuasiveness of argument. See *In re Spada*, *supra*; *In re Corkill*, 771 F.2d 1496, 1500, 226 USPQ 1005, 1008 (Fed. Cir. 1985); *In re Caveny*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985); *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984).

If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. See *In re Grabak*, 769 F.2d 729, 733, 226 USPQ 860, 873 (Fed. Cir. 1985); *In re Rinehart*, *supra*. [2] In reviewing the examiner's decision on appeal, the Board must necessarily weigh all of the evidence and argument. An observation by the Board that the examiner made a *prima facie* case is not improper, as long as the ultimate determination of patentability is made on the entire record. *In re Plasecki*, 745 F.2d at 1472, 223 USPQ at 788; *In re Rinehart*, 531 F.2d at 1052, 189 USPQ 147.

The record here reveals that the application was fully prosecuted. References cited and applied by the examiner, the applicant responded with argument, and the examiner then issued a final rejection, stating why he was not persuaded by the applicant's argument. On review the Board stated that its decision was reached "after careful consideration of the appealed claims, the evidence of obviousness relied upon by the examiner and the arguments advanced by the appellant and the examiner." The Board explained why it was unpersuaded by Oetiker's arguments on appeal. We discuss irregularity in the procedure. The Board explained that the examiner's rejection constituted a *prima facie* case of obviousness, did not make a new rejection.

[3] Oetiker also argues that the concept of a "*prima facie* case of obviousness" has a role outside of the chemical arts. Oetiker

refers to the origins of this term in the chemical practice where properties may not be apparent from chemical structure. Oetiker distinguishes mechanical inventions, where the properties and workings of a mechanical device are apparent in the drawing of the structure. We think that the PTO is correct in treating the concept of the *prima facie* case as of broad applicability, for it places the initial burden on the examiner, the appropriate procedure whatever the technological class of invention. That a *prima facie* case may be established, or rebutted, by different forms of evidence in various technologies does not restrict the concept to any particular field of technology. "[T]he requirement of unobviousness in the case of chemical inventions is the same as for other types of inventions." *In re Johnson*, 747 F.2d at 1460, 223 USPQ at 1263. This procedural tool is recognized in fields outside of the chemical arts. E.g., *In re Benno*, 768 F.2d 1340, 226 USPQ 683 (Fed. Cir. 1985); *In re McCarthy*, 763 F.2d 411, 226 USPQ 99 (Fed. Cir. 1985); *In re De Blauwe*, 736 F.2d 699, 222 USPQ 191 (Fed. Cir. 1984).

The Board's usage of the term *prima facie* was imprecise for, as discussed *supra*, the term "*prima facie* obvious" relates to the burden on the examiner at the initial stage of the examination, while the conclusion of obviousness *vel non* is based on the preponderance of evidence and argument in the record. However, it was clear that the Board did not make a new rejection. Therefore the Board did not err in declining to consider at that stage the proffered evidence of commercial success.

THE MERITS

Oetiker's invention is an improvement in a seamless, earless metal clamp, a hose clamp, that was generally described in an earlier 1004 patent of Oetiker, but that differs in the presence of a feature that is described as a preassembly "hook". This "hook" serves both to maintain the preassembly condition of the clamp and to be disengaged automatically when the clamp is tightened.

The cited references were Oetiker's earlier-granted 1400 patent, combined with a certain Lauro 1400 patent. Lauro describes a plastic hook and eye fastener for use in garments, in which "unitary tabs of sewing thread puncturable plastic material . . . are affixed to clothing and the like by sewing." Oetiker argues that there is no suggestion or inspiration to the artisan to combine the teachings of the cited references, and that

Lauro is nonanalogous art. Oetiker concludes that these references were improperly combined; that a person of ordinary skill, seeking to solve the problem facing Oetiker, would not look to the garment art for the solution. Oetiker also argues that even if combined the references do not render the claimed combination obvious.

The examiner stated that "since garments commonly use hooks for securement", a person faced with the problem of unreliable maintenance of the pre-assembly configuration of an assembly line metal hose clamp would look to the garment industry art. The examiner explained further by stating that "Appellant's device as disclosed could be utilized as part of a garment." The Board did not repeat or support the examiner's argument, or discuss its relevance. Indeed, the argument is not supportable. However, the Board held that the Lauro reference, although not "within the appellant's specific field of endeavor" is nonetheless "analogous art" because it relates to a hooking problem, as does Oetiker's invention.

The Board apparently reasoned that all hooking problems are analogous. At least, that is the argument now pressed by the Commissioner. The Commissioner states in his brief on appeal that "A disengagable catch, such as that used by Oetiker, is a common everyday mechanical concept that is variously employed in door latches and electrical and otherswitches, as well as in the hook and eye apparatus disclosed by Lauro." No such references were cited, however. While this court may take judicial notice of common everyday mechanical concepts in appropriate circumstances, the Commissioner did not explain why a "catch" of unstated structure in an electrical switch, for example, is such a concept and would have made Oetiker's invention obvious. Indeed, the Commissioner did not respond to Oetiker's argument that the cited references provide no teaching or suggestion that Lauro's molded hook and eye fastener, even if combined with Oetiker's 1004 clamp, would achieve Oetiker's purpose.

[4] In order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See *In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reason-

ably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider "the reality of the circumstances". *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) — in other words, common sense — in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.

It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself. *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988). *In re Geiger*, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

[5] Oetiker's invention is simple. Simplicity is not inimical to patentability. See *Good-year Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275, 279, 60 USPQ 386, 388 (1944) (simplicity of itself does not, negative invention). *Penduit Corp. v. Demissio Mfg. Co.*, 810 F.2d 1561, 1572, 1 USPQ2d 1593, 1600 (Fed. Cir.) (the patent system is not foreclosed to those who make simple inventions), *cert. denied*, 481 U.S. 1052 (1987).

We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is

REVERSED.

Nies, C.J., concurring.

I agree with the panel decision and write only to express my understanding of the language that there must be some teaching, reason, suggestion, or motivation found "in the prior art" or "in the prior art references" to make a combination to render an invention obvious within the meaning of 35 U.S.C. § 103 (1988). Similar language appears in a

number of opinions¹ and, if taken literally, would mean that an invention cannot be held to have been obvious unless something specific in a prior art reference would lead an inventor to combine the teachings thereof with another piece of prior art.

This restrictive understanding of the concept of obviousness is clearly wrong. Other statements in opinions express the idea more generally. We have stated, for example, that the test is: "whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention." *In re Golderman*, 933 F.2d at 986, 18 USPQ2d at 1885, and "what the combined teachings... would have suggested to one of ordinary skill in the art." *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991). We have also stated that "the prior art as a whole must suggest the desirability... of making the combination." *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 65 USPQ2d 1434, 1438 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988). *Lindemann Mouldmaschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 227 USPQ 481, 488 (Fed. Cir. 1984).

I believe that it would better reflect the concept of obviousness to speak in terms of "from the prior art" rather than simply "in the prior art." The word "from" expresses the idea of the statute that we must look at the obviousness issue through the eyes of one of ordinary skill in the art and what one would be presumed to know, with that background. What would be obvious to one of skill in the art is a different question from what would be obvious to a layman. An artisan is likely to extract more than a layman from reading a reference.

In any event, variance in the language used in opinions does not change the nature of the statutory inquiry. Under section 103, subject matter is unpatentable if it "would have been obvious... to a person having

ordinary skill in the art." While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or prior art specifically suggest making the combination. *In re Nilsson*, 831 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988). Such suggestion or motivation to combine prior art teachings can derive solely from the existence of a teaching, which one of ordinary skill in the art would be presumed to know, and the use of that teaching to solve the same of similar problem which it addresses. *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979). See, also, *EWI Corp. v. Reliance Universal, Inc.*, 755 F.2d 898, 906-07, 225 USPQ 20, 25 (Fed. Cir.), *cert. denied*, 474 U.S. 843 (1985). *In re Sernaaker*, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). See also, *Ex parte Clapp*, 227 USPQ 922, 973 (Bd. Pat. App. & Inter. 1985) ("To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references").

In sum, it is off the mark for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference.

Plager, J., concurring.

I join in the carefully-reasoned and well-written opinion of Judge Newman. With regard to Part I dealing with the PTO procedure, her explanation of the meaning and application of the "prima facie case" concept should help clarify an area that remains marked by a lack of clarity. The need for that discussion, however, illustrates the pitfalls of the "prima facie" practice of the PTO, and the difficulties created by this particular legally convoluted concept.

An applicant for a patent is entitled to the patent unless the application fails to meet the requirements established by law. It is the Commissioner's duty (acting through the examining officials) to determine that all requirements of the Patent Act are met. The burden is on the Commissioner to establish that the applicant is not entitled under the law to a patent. *In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). In rejecting an application, factual determinations by

the PTO must be based on a preponderance of the evidence, and legal conclusions must be correct. *In re Cavney*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985).

The process of patent examination is an interactive one. See generally, Chisum, *Patents*, § 11.03 *et seq.* (1992). The examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner. The "prima facie case" notion, the exact origin of which appears obscure (see *In re Plazeeck*, 745 F.2d 1468, 1472, 233 USPQ 785, 788 (Fed. Cir. 1984)), seemingly was intended to leave no doubt among examiners that they must state clearly and specifically any objections (the prima facie case) to patentability, and give the applicant fair opportunity to meet those objections with evidence and argument. To that extent the concept serves to level the playing field and reduces the likelihood of administrative arbitrariness.

But the ultimate decision that must be made by the PTO in the examination process, and by this court on appeal, is not whether a prima facie case for rejection was made; the only question is whether, on the whole record, the applicant has met the statutory requirements for obtaining a patent. When a final rejection is described in terms of whether a prima facie case was made, that intermediate issue diverts attention from what should be the question to be decided.

Specifically, when obviousness is at issue, the examiner has the burden of persuasion and therefore the initial burden of production. Satisfying the burden of production, and thus initially the burden of persuasion, constitutes the so-called prima facie showing. Once that burden is met, the applicant has the burden of production to demonstrate that the examiner's preliminary determination is not correct. The examiner, and if later involved, the Board, retain the ultimate burden of persuasion on the issue.

If, as a matter of law, the issue is in equipoise, the applicant is entitled to the patent. Thus on appeal to this court as in the PTO, the applicant does not bear the ultimate burden of persuasion on the issue. In the end there is no reason there or here to argue over whether a "prima facie" case was made out. The only determinative issue is whether the record as a whole supports the legal conclusion that the invention would have been obvious.

Patent and Trademark Office
Board of Patent Appeals and Interferences

Ex parte Skinner

No. 650-69

Decided November 25, 1986

Released April 6, 1987

PATENTS

1. Practice and procedure in Patent and Trademark Office — Prosecution — In general (§110.09901)

Examiner who has reason to believe that functional limitation asserted to be critical to establishing novelty may be inherent characteristic of prior art must provide some evidence or scientific reasoning to establish reasonableness of such belief before applicant is required to demonstrate that subject matter shown to be in prior art does not possess characteristic relied upon.

2. Practice and procedure in Patent and Trademark Office — Prosecution — In general (§110.09901)

Examiner must, in case in which incentive to combine teachings of references is not readily apparent, explain why such combination of reference teachings is proper.

Application for patent of James F. Skinner, application, No. 427,717, filed September 29, 1982, for Mold, Molding Method and Molding article. From rejection of Claims 7, 13, 20, and 21, applicant appeals. Affirmed in part.

Hubert E. Dubb, and Fiesler, Dubb, Meyer and Lovejoy, both of San Francisco, California, for applicant.

Before Winters, Goolkasian, and Emery, Examiners-in-Chief.

Goolkasian, Examiner-in-Chief.

This is an appeal from the examiner's final rejection of claims 7 through 13, 20, and 21. Claims 1 through 6 and 14 through 19 remain in the case but stand withdrawn pursuant to a restriction requirement.

Appellant's invention is directed to a mold of the type used to produce plastic articles. The claimed mold is very smooth and is characterized by having a surface portion having a surface roughness of no more than about 12.5 x 10⁻⁸ meters, RMS (root mean

square). The mold surface is coated with material which is substantially void-free, non-corroding, and has a Rockwell C hardness above about 60. This is achieved by vacuum deposition or sputtering of chromium or rhodium onto the mold surface. Claim 7 is illustrative and reads as follows:

7. In a mold (24) useful for preparing a molded plastic article (10), the mold (24) having a mold surface (30) having a surface portion (32) which is replicated onto the molded plastic article (10), an improvement comprising:

wherein said surface portion (32) has a surface roughness of no more than about 12.5 x 10⁻⁸ meters, RMS; and including a surface coating (34) covering said surface portion (32), said coating (34) being substantially void-free, substantially non-corroding when exposed to ambient atmospheric conditions, having a Rockwell C hardness above about 60, and having a surface roughness of no more than about 12.5 x 10⁻⁸ meters, RMS.

The references relied on by the examiner are:

Mizutani et al. (Mizutani) 4,138,086, Feb. 06, 1979
 Nyman et al. (Nyman) 4,262,875, Apr. 21, 1981
 Japan 54-25283, Feb. 26, 1979

Claims 7, 8, 11, and 12 stand rejected under 35 U.S.C. 102 over Mizutani. Claims 7 through 13, 20, and 21 stand rejected under 35 U.S.C. 103 over Mizutani in view of Nyman and further in view of Japanese Patent Pub. No. 54-25283.

We consider first the rejection under 35 U.S.C. 102. The Mizutani reference is directed to a mold used for manufacturing contact lenses. The mold is composed of two metallic mold halves forming a cavity in which a silicone resin contact lens may be molded. The surface of each section of the mold is plated with chromium or nickel so that a contact lens having high surface optical quality can be manufactured. The mold is said to be plated with chromium or nickel and is said to impart excellent optical properties to the surface of the lens. It is the examiner's position, as stated in the Final Rejection, that "[a]lthough the patentee does not explicitly disclose the properties claimed, by applicant, such properties may be inherent characteristics of the reference coating." (Emphasis added.) We reverse.

[1] It is by now well settled that the burden of establishing a *prima facie* case of

'The quoted language appears in the office action mailed 11/22/83 (paper no. 5) which is expressly referred to in the Final Rejection.

anticipation, resides with the Patent and Trademark Office. *In re Plasseck*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) quoting *In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967). It is the examiner's position that the mold of Mizutani may inherently have the characteristics of the claimed mold. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323 (CCPA 1981). We are mindful that there is a line of cases represented by *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971) which indicates that where an examiner has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, the examiner possesses the authority to require an applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. Nevertheless, before an applicant can be put to this burdensome task, the examiner must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art. In the case before us, no such evidence or reasoning has been set forward.

Appellant urges that the mold for a contact lens would not reasonably be expected to have a surface roughness of no more than about 12.5 x 10⁻⁸ meters, RMS. In this regard, we note that appellant's specification indicates that the desired degree of surface smoothness is only achieved by polishing or diamond turning of the surface finish. See page 2, lines 12 through 14. Moreover, appellant utilizes a sputtering technique to apply the chromium onto the mold surface rather than a plating technique as utilized by the reference patent. Absent reasons on the part of the examiner regarding why the natural result of the process used to prepare the mold of Mizutani would have been to achieve the characteristics claimed by appellant's mold, a *prima facie* case of anticipation has not been established. See *In re Oelrich*, *supra*.

Claims 7 through 13, 20, and 21 stand rejected under 35 U.S.C. 103 over Mizutani in view of Nyman and further in view of the Japanese reference. We have carefully considered all of appellant's arguments but are unpersuaded of error in the examiner's rejection with respect to claims 7 through 13.

At the outset we note that appellant's specification indicates, as background, that it is known that molded plastic articles can be made with relatively smooth surfaces by providing a relatively smooth surface for the mold in which the article is manufactured. Relatively smooth surfaces are generally accomplished by machine grinding and lapping any portion of the mold surface which is to be replicated on a position on the plastic article where smoothness is desired. Appellant notes that surfaces having a roughness of 2.5 to 5 x 10⁻⁸ meters, RMS, have been prepared in the art by polishing or diamond turning. We are in full agreement with the examiner that one of ordinary skill, desiring as smooth a surface as possible on the contact lens mold of Mizutani, would have considered it obvious to achieve a surface finish within the range claimed by appellant. The Nyman reference teaches quite clearly that a chromium layer on a mold serves to harden the surface of a mold and make it resistant to scratching of the surface by abrasive particles. We shall take official notice that chromium plated or chromium coated metal surfaces are more corrosion resistant than would be the base metal itself. Indeed, the Hack's Chemical Dictionary definition of chromium describes chromium plating as "the electrolytic coating of metals with a layer of c.0.00001 in. thick over a layer of nickel which produces a non-corroding surface." The Nyman reference also teaches that plating of chromium onto mold surfaces develops a film which is "rough" (column 2, lines 64-66) and suggests vapor deposition techniques, e.g., sputtering and the like to apply a less rough, thin, stress free conformal layer containing chromium. One of ordinary skill having the references before him would have considered it obvious to improve the mold surface of the Mizutani mold by finely polishing the metal backing material to the required extent and then sputtering a layer of chromium thereover to improve the hardness and oxidation exposure of the base metal.

Claims 20 and 21, however, are directed to the use of rhodium as the metal in place of or in conjunction with chromium. The examiner relies on the Japanese reference for a teaching of utilizing a rhodium layer on the surface of a brass plate. The Japanese reference is directed to a method of making an ornamental part for a time piece (watch) by coating the part with a thin layer of compounds having a refractive index less than 2.41. Among the compounds which may be coated thereon are compounds of chromium, titanium, iron, copper, mercury, lead, and

bismuth. Specifically, rhodium is first deposited onto the brass base metal. Subsequently, a chromium layer and chromium oxide layer are vacuum deposited thereon. The examiner has provided no information regarding why the Japanese reference used the rhodium coating as an undercoat and no reasons or incentive for utilizing the rhodium coating of the Japanese reference as an undercoat for the chromium of either Mizutani or Nyman.

[2] To properly combine the references to reach the conclusion that the subject matter of claims 20 and 21 would have been obvious, case law requires that there must have been some teaching, suggestion, or inference in either reference, or both, or knowledge generally available to one of ordinary skill in the relevant art, which would have led one of ordinary skill in the art to combine the relevant teachings of the references. See *ACS Hospital System, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). When the incentive to combine the teachings of the references is not readily apparent, it is the duty of the examiner to explain why combination of the reference teachings is proper. In other words, the examiner must indicate the reasons why one skilled in the art would have substituted the sputtered chromium/rhodium combination of the Japanese patent for the sputtered chromium of the Nyman reference when it was substituted for the metal plated chromium of the Mizutani patent. Absent such reasons or incentives, the teachings of the references are not combinable. We reverse the examiner's rejection.

The examiner's rejection of claims 7, 8, 11, and 12 under 35 U.S.C. 102 is reversed. The examiner's rejection of claims 20 and 21 under 35 U.S.C. 103 is also reversed. The examiner's rejection of claims 7 through 13 under 35 U.S.C. 103 is affirmed.

REVERSED-IN-PART

The Derwent translation of the Japanese reference indicates that the rhodium layer is deposited at three thousand angstrom thickness by a process described as "metalizing plating." While we would normally consider this to be an electroplating process, appellant's Brief (page 8) indicates that the rhodium is applied by vacuum deposition.

U.S. International Trade Commission

In re Certain Cryogenic Ultramicrotome Apparatus

Investigation No. 337 TA-256

Issued March 12, 1987

PATENTS

1. U.S. International Trade Commission
In general (8155.01)

Motion to suspend International Trade Commission investigation pending conclusion of re-examination proceedings in Patent and Trademark Office is granted, in view of substantial likelihood that patent may be changed or cease to exist in near future.

United States International Trade Commission investigation No. 337 TA-256. On motion by complainant Research & Manufacturing Co., Inc., to suspend investigation. Motion granted.

Edwin M. Baranowski, Judd L. Kessler, Mark Wigmore and Porter Wright, Morris & Arthur, of Columbus, Ohio and Washington, D.C., for complainant Research & Manufacturing Co.

William H. Meserole, Burton S. Scheiner, and Dennis Meserole, Pollack & Scheiner, all of Arlington, Va., for respondent C. Reichert Optische Werke A.G.

Mathias, Administrative Law Judge.

ORDER NO. 14: Initial

Determination Suspending Investigation

By motion filed on January 21, 1987, complainant, Research Manufacturing Co., Inc. ("RMC"), has moved to suspend this investigation pending the conclusion of proceedings in the United States Patent and Trademark Office for re-examination of complainant's U.S. Letters Patent No. 3,680,420 ("the '420 patent'"). ("Motion to Suspend") (Motion Docket No. 256-10). Respondents oppose complainant's motion to suspend and the Commission investigative staff support it. Oral argument was held on this motion and respondents' motion for summary determination (Motion Docket No. 256-9) on February 17, 1987. Having considered all of the arguments of the parties, I grant complainant's motion to suspend under

the authority of Rules 210.53(c) and 210.59 of the Commission's Rules of Practice and Procedure. (19 C.F.R. §§ 210.53(c) and 210.59).

Complainant, RMC, did not participate in the preparation or processing of the original application for the '420 patent. Such activity was conducted by the named inventor Joseph Blum and Ivan Sorvall, Inc. Complainant purchased the patent at a later date from Dupont. Complainant's Motion to Suspend, at 3. Mr. Blum and the patent attorney involved in the patent application process are now deceased. (Motion Docket No. 256-9, at 7).

During the course of discovery in this investigation, respondents obtained certain documents which raised issues as to the validity and enforceability of the '420 patent. Such documents were the subject of respondent's motion for summary determination, which I have denied by order issued this same date for the reason that genuine issues of material fact remain unresolved. As a consequence of this discovery, however, complainant has filed an application for re-examination of the suit patent with the PTO, pursuant to 35 U.S.C. Chapter 30.

All of the same issues as to validity and enforceability which are involved in this investigation are before the Patent and Trademark Office in the re-examination proceeding. (Preliminary Conference Transcript, at 189, lines 19-25). As stated by the Commission in *Certain High-Voltage Circuit Interrupters and Components Thereof* ("Circuit Interrupters"), Inv. No. 337-TA-64 [204 USPQ 50, 53-54] (1979):

[A] serious issue has been raised concerning the wisdom of both the Commission and the Patent and Trademark Office simultaneously pursuing the issue of the validity of this patent.

The Patent and Trademark Office is the agency in the government primarily responsible for the issuance of patents. In considering the issue of patent validity, this Commission would certainly benefit in being able to consider the Patent and Trademark Office's ultimate determination on the patentability of the claims involved in the reissue proceeding, as well as the question of whether there was fraud on the Patent and Trademark Office.

Commission Opinions in Support of Suspension of Investigation — Views of Chairman Parker and Commissioners Moore and Beldell, at 7 (November 16, 1979).

The Commission stated further in *Circuit Interrupters* that:

[I]t is inequitable to force the parties to litigate the validity and enforceability of the patent when the lead government agency for patents is considering the same issues. (Id. at 8).

Finally, the Commission found that the opponent of suspension, the complainant in *Circuit Interrupters*, had alternative remedies in Federal Court. (Id. at 8-9).

[1] Here, in like manner, respondents have available alternative remedies in U.S. Federal Circuit Court, if they wish to remove the cloud of the complainant's patent from their dealings in the marketplace. They can bring a declaratory judgment action and obtain a ruling concerning patent validity and enforceability. As urged by staff at the oral argument herein, it is not an efficient use of this agency's resources, or the time and expense to the parties, to expend the resources necessary to take this investigation to completion now, when there is a substantial likelihood that in the near future the patent may be changed or even cease to exist. Should the Patent and Trademark Office give complainant the relief requested in the re-examination proceeding, or modify the patent, it might result in a second proceeding before the Commission on similar, but modified issues. (Preliminary Conference Transcript, at 190-191). Such a result would be an undue imposition on the Commission and the parties to this investigation.

ACCORDINGLY, complainant's motion to suspend this investigation, pending the conclusion of re-examination proceedings in the United States Patent and Trademark Office, is granted.

This Initial Determination is CERTIFIED to the Commission together with the following:

1. Motion 256-10, complainant's Motion to Suspend the Investigation.
2. Response of respondents to complainant's motion to suspend.
3. Response of Commission investigative staff in support of the motion to suspend.

4. Motion 256-9, respondents' Motion For Summary Determination of Patent Invalidity and/or Unenforceability as well as the Supplement thereto.

5. Complainant's responses to the Motion for Summary Determination, and the Supplemental Exhibit thereto.

6. Staff's response to the Motion for Summary Determination and response to complainant's request for leave to submit supplemental exhibit.

The first question is: "Do you find that Hession was the first to conceive the invention."

Now let me translate that question. . . . Translated, what that means is: Do you find by clear and convincing evidence that Hession was the first to conceive the invention."

J. App. 3540-3544.

[3] Although these instructions do not explicitly require that the inventor's testimony on conception must be corroborated, they do instruct the jury to consider testimony or other pieces of evidence in light of all the evidence and to seek clear and convincing evidence of conception. In view of these instructions as a whole, and the evidence of record, we do not believe that the jury was misled on the issue of corroboration.

Second, the trial judge, in his November 1989 Supplemental Judgment Order, awarded Sperry one-half its attorney fees, based on Fed. R. Civ. P. 11 and 37(c), because New Idea wrongfully refused to admit certain facts during discovery. The judge further stated in that order:

Should the Court of Appeals agree with the defendants that they were not required to prove that Burkhart was the first to conceive the invention then, of course, 100 percent of the reasonable cost of proving the "Hession facts" should be awarded.

New Idea Farm Equipment Corp. v. Sperry Corp., No. 84-C-10665, slip op. at 4 (N.D. Ill. November 6, 1989).

Sperry now contends that it was not necessary to prove Burkhart's conception, which New Idea should have admitted during discovery. Sperry therefore claims that it is entitled to the other half of its attorney fees. We disagree. An award of attorney fees under Rules 11 or 37 is subject to our review under an abuse of discretion standard. See *National Hockey League v. Metropolitan Hockey Club, Inc.*, 427 U.S. 639, 642, 96 S.Ct. 2778, 2780, 49 L.Ed.2d 747, 751 (1976). No such abuse was shown. Moreover, the outcome of the case could not have been nearly as clear at trial as hindsight might now indicate. Finally, proof of Burkhart's conception was relevant and necessary for Sperry to prevail. We see no abuse of the trial judge's discretion in not awarding the other half of the attorney fees to Sperry.

We have considered all the other points raised by New Idea, but find no reversible error.

III CONCLUSION

As indicated by its denial of New Idea's post-trial motions, the district court was not convinced by the record before the jury that a reasonable person could not have reached a verdict for Sperry or that the jury was misled. We are equally unpersuaded. New Idea has not convinced us that the jury's findings are not supported by substantial evidence, that those findings cannot support the legal conclusions drawn by the jury or the judge, or that the judge abused his discretion in denying New Idea's motion for a new trial or for JNOV. Therefore, the judgment is affirmed.

AFFIRMED

Court of Appeals, Federal Circuit

In re Mills

No. 90-1184

Decided October 9, 1990

PATENTS

1. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (\$115.0903.03)

Apparatus which produces aerated cementitious composition by driving output pump for its mixing chamber at capacity greater than feed rate of ingredients into mixing chamber, and thereby drawing air into composition, is not obvious in view of prior patent for mixing apparatus, even though device of prior patent provides for regulation of flow rate into mixing chamber, since patent contains no suggestion or motivation for overdriving output pump so as to entrain air in mixed ingredients.

2. Patentability/Validity — Anticipation — In general (\$115.0701)

Patentability/Validity — Obviousness — Relevant prior art — In general (\$115.0903.03)

Board of Patent Appeals and Interferences erred by requiring applicant to show that prior art reference lacked functional characteristics of claimed device, since even though such requirement would be proper for rejection based on lack of novelty, it is not

pertinent whether prior art device possesses claimed invention's functional characteristics if, as here, application was rejected on basis of obviousness and reference does not describe or suggest claimed invention's structure.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of Peter S. Mills, serial no. 891,374, continuation of serial no. 607,805, filed May 4, 1984. From decision upholding examiner's rejection of claims 6-9 and 11-14, applicant appeals. Reversed.

James C. Wray, McLean, Va. for appellant.

Murriel E. Crawford, assistant solicitor (Fred C. E. McKelvey, solicitor, with her on brief), for appellee.

Before Miller, senior circuit judge, and Mayer and Lourie, circuit judges.

Lourie, J.

This appeal is from the November 2, 1989, decision of the United States Patent and Trademark Office Board of Patent Appeals and Interferences. (Board). Appeal No. 188-014, affirming the examiner's rejection, under 35 U.S.C. §103, of claims 6-9 and 11-14. In Mills' application, Serial No. 1891374, a continuation of Serial No. 8697805, filed May 4, 1984, entitled "Methods of and Apparatus for Producing Aerated Cementitious Compounds." The remainder of the claims (1-5, 10, and 15) have all been cancelled. We reverse.

BACKGROUND

A. The Invention

Mills' claimed invention is an apparatus for producing aerated cementitious compositions. Claim 6 is the broadest claim:

6. Apparatus for producing an aerated cementitious composition, comprising a mixing chamber being open to atmosphere and containing mixing means, said means for feeding ingredients comprising cement, foaming agent and liquid into the mixing chamber.

mixing means for mixing ingredients fed to the mixing chamber, pump means for pumping the mixed ingredients to a desired site and having a pump inlet connected to an outlet of the mixing chamber, drive motor means connected through gearbox means providing a pumping capacity of the pump means greater than the feed rate of the ingredients to the mixing chamber provided by the feed means, such that in operation air is drawn into the mixing chamber, and entrained in the mixed ingredients.

The essence of Mills' invention is the machine's ability to aerate a cementitious composition by, driving the output pump at a capacity greater than the feed rate, thereby drawing air into the composition. This action produces a composition with substantially lower density than standard cementitious composition mixing ingredients.

B. The Reference

The sole reference upon which the Board relied in affirming the examiner's rejection was Mathis et al. U.S. Patent 4,117,547 (Mathis). Mathis discloses a mixing chamber which is open to the atmosphere and which contains a mixing means. Two feed means for feeding ingredients in the mixing chamber are provided. The first feed means may consist of a screw conveyor and the second, a flow metering device such as an adjustable valve. A pump means pumps the mixture from the mixing chamber to a desired site and a drive motor means is connected to mixing means and pump means. A separate motor drives the feed means.

A control system exists to arrest the feed means so as not to overflow the mixing chamber. This system comprises a level detector in the mixing chamber, which signals the feed means to close when the mixing chamber stores the predetermined maximum permissible quantity of material.

The examiner rejected the claims at issue under 35 U.S.C. §103 as being unpatentable not only over Mathis but also in view of Gibson et al. U.S. Patent 2,711,770. However, the Board affirmed the examiner's rejection of claims 6-9 and 11-14 based solely on the Mathis reference. With regard to Gibson the Board stated:

We view the teachings of Gibson at best as being merely confirmatory of the fact that aerated mixtures can be produced by machines in which a pump means operates upon a mixing chamber at a greater rate than the ingredients are fed thereto so that air is drawn into the mixing chamber and entrained in the mixed ingredients.

App. 2.

C. The Rejection

The Board affirmed the examiner's Section 103 rejection of claims 6-9 and 11-14, "finding correspondence in the Mathis reference for all of the subject matter recited in the appellants' claims. . . ." With regard to Mills' claim language relating to aerating the mixture, the Board stated: "[i]n our opinion, the differences between claim 6 and the Mathis machine . . . lie solely in the functional language of the claim." The Board further found that Mathis teaches the use of separate input and output motors in order to permit the various mixing means and pumps to operate at different rates, and that Mathis "contemplates a situation wherein the rate of the outlet pump would be greater than the inlet pumps. . . ." The Board concluded on this point: "[w]e are of the opinion that the Mathis machine is capable of being operated in such a fashion as to cause [the output] pump 18 to draw air into the mixing chamber 17 so that it is entrained in the mixture."

The Board also agreed with Mills' contention that Mathis is not directed to the problem of producing aerated cementitious material, but noted that Mills is not claiming a method, but an apparatus, and all of Mills' apparatus structure is present in the Mathis machine.

II DISCUSSION

All of the rejected claims are apparatus claims. The Board found "correspondence in the Mathis reference for all of the subject matter recited in appellants' claims" and that "[t]he Mathis machine discloses all of the structure set forth in claim 1" (a method not before us). It asserts that the use of a mechanism would have been obvious and that the differences between claim 6 and the Mathis machine lie solely in the functional language of the claim, the preamble merely stating an intended use for the machine. This language suggests a lack of novelty rejection under 35 U.S.C. §102, rather than an obviousness rejection. However, no Section 102 rejection has been made or is before us. What is before us is a rejection for obviousness, and we must decide whether the Board erred in that rejection.

We note first that nonobviousness is a question of law to be determined from the facts. *Stratoffex, Inc. v. Aerogrip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983). We review the Board's

determination of obviousness, based on the scope and content of the Mathis reference and the differences between the Mathis reference and the Mills claims, for correctness or error. *In re Carleton*, 599 F.2d 1021, 1024 n.14, 202 USPQ 165, 169 n.14 (CCPA 1979).

[1] After reviewing the record, the arguments in the briefs, and the Mathis reference, we conclude that Mathis would not have rendered the claimed invention obvious. The closest Mathis comes to suggesting Mills' claimed apparatus is at column 3, lines 42-47, which states:

[T]he rate at which the inlet 2b receives a solid constituent depends on the speed of the feed screw 4. Such speed can be regulated by a prime mover 6 which includes a variable-speed transmission.

This brief reference contains no suggestion of "pump means and the feed means providing a pumping capacity of the pump means greater than the feed rate of ingredients to the mixing chamber provided by the feed means, such that in operation air is drawn into the mixing chamber, and air entrained in the mixed ingredients," as provided for in Mills' claim 6. While Mathis' apparatus may be capable of being modified to run the way Mills' apparatus is claimed, there must be a suggestion or motivation in the reference to do so. See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. . . .") We see no such suggestion. The apparatus claimed by Mills is different from that of Mathis, since the fact that motor 6 of Mathis (the feed means) can be run at a variable speed does not require that motor 20 (connected to the pump) be run at a lesser speed "such that in operation air is drawn into the mixing chamber and air entrained in the mixed ingredients."

[2] The Board found that the difference between the claimed subject matter and the prior art resided solely in functional language and that appellant had to show that the prior art device lacked the functional characteristics of the claimed device, citing *In re Ludtke*, 441 F.2d 660, 169 USPQ 563 (CCPA 1971). *Ludtke*, however, dealt with a rejection for lack of novelty, in which case it was proper to require that a prior art reference cited as anticipating a claimed invention be shown to lack the characteristics of the claimed invention. That proof would, in fact, negate the assertion that the claimed invention was described in the prior art. We are here, however, facing an obvious-

ness issue. It is not pertinent whether the prior art device possesses the functional characteristics of the claimed invention if the reference does not describe or suggest its structure. That is the case here. Given the facts before us, we hold that the Board was in error in affirming the examiner's rejection of claims 6-9 and 11-13 as obvious in view of Mathis, and we therefore reverse the Board.

REVERSED

Court of Appeals, Federal Circuit

In re Webb

No. 90-1176

Decided October 11, 1990

PATENTS

1. Practice and procedure in Patent and Trademark Office — Board of Patent Appeals and Interferences — Rules and rules practice (§110.1105)

JUDICIAL PRACTICE AND PROCEDURE

Procedure — Judicial review — Appealability (§410.4603)

Issue of whether design for hip prosthesis is functional is not properly before Court of Appeals for Federal Circuit, since examiner's final rejection of design patent application did not clearly specify functionality as ground for rejection, and since ground of functionality therefore cannot, by operation of 37 CFR 1.196(e), be incorporated into decision by Board of Patent Appeals and Interferences affirming rejection.

PATENTS

2. Patentability/Validity — Subject matter (§115.05)

Patentability/Validity — Design patents (§115.17)

Board of Patent Appeals and Interferences erred by holding that design for hip prosthesis is per se "functional," and therefore unpatentable, solely on ground that prosthesis is hidden from view during final stage of its useful life, since particular article's design cannot be presumed functional unless article is always concealed in its normal

and intended use, since "normal and intended use" of article includes period beginning after completion of manufacture or assembly and ending with article's ultimate destruction, loss, or disappearance, and since only facts of specific case will establish whether article's design can be observed during that period in such manner as to demonstrate ornamentality.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Design patent application of John D. Webb, Jr., Roy Y. Hori, and George E. Simpson, serial no. 833,470. From decision upholding examiner's final rejection of sole claim in application, applicants appeal. Reversed and remanded.

Michael H. Baniak, of William, Brinks, Olds, Hofer, Gilson & Lione, Chicago, Ill. (Sandra A. Sellers, of William, Brinks, Olds, Hofer, Gilson & Lione, Washington, D.C., with him on brief), for appellant.

Nancy C. Sluter, associate solicitor (Fred E. McKelvey, solicitor, with her on brief), Arlington, Va., for appellee.

Before Archer, Plager, and Clevenger, circuit judges.

Clevenger, J.

This is an appeal from a decision of the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences ("Board") affirming the final rejection of the sole claim of appellants ("Webb") U.S. Design Patent Application Serial No. 833,470. The claim for "[t]he ornamental design for a grooved femoral hip stem prosthesis as shown and described," was "rejected as being unpatentable under 35 U.S.C. §171 as being directed to non-statutory subject matter." The design can be appreciated from Figure 2 of the application reproduced below.

was a type of antitrust violation, jurisdiction of the district court not an issue raised).

[5] The sole question raised by the present complaint is whether the involved contracts should be interpreted as having conveyed title to two then nonexistent U.S. patent applications. No Act of Congress relating to patents within the meaning of 28 U.S.C. §1338(a) spells out criteria for determining what does or does not constitute a conveyance by contract. The district court committed no error, therefore, in dismissing the complaint for lack of jurisdiction.

(2) Other Bases

BSI argues that 28 U.S.C. §1331 and 35 U.S.C. §261 provide bases for jurisdiction "independently" of 28 U.S.C. §1338(a). The short answer is that if those other bases for the district court's jurisdiction exist in this case they are irrelevant in this court.

[6] Our jurisdiction to decide appeals from district courts is nonexistent when the jurisdiction of the district was not based at all on either 28 U.S.C. §1338(a) or 28 U.S.C. §1346. Federal Courts Improvement Act of 1982, 28 U.S.C. §1295(a)(2). Had Rasmussen moved for dismissal of this appeal for lack of jurisdiction in this court, that motion would have been granted, for we do have jurisdiction to determine whether the district court had jurisdiction under §1338(a), and thus whether this court has jurisdiction to decide the appeal. *C.R. Bard, Inc. v. Schwartz*, 716 F.2d 874, 877, 219 USPQ 197, 200 (Fed. Cir. 1983); *Montgomery Ward & Co. v. Zenith Radio Corp.*, 673 F.2d 1254, 1258 n.7, (CCPA, 1982). Thus, our determination that the order appealed from was proper, because the district court lacked jurisdiction under §1338(a), requires dismissal of the appeal for lack of jurisdiction in this court.

Though we lack jurisdiction in this case because no jurisdiction in the district court was based on §1338(a), we include the following short reference to BSI's assertions to provide guidance to others who may seek to bring appeals of this type to this court, and to illustrate the foundation for reference to BSI's arguments in section (4) of this opinion.

BSI notes the presence of "laws" in §1331 and says the present action raises matters of federal concern and relationship. The fact is that the outcome of the present contract action, however, it may be decided in a state court or under state law, is a matter of monumental disinterest to the federal government. Whether the contracts are interpreted in favor of BSI or Rasmussen is a matter of no federal concern or relationship whatsoever.

[7] Nothing in §261 itself creates a right of action in the federal courts seeking an interpretation of contracts. BSI's repeated mislabeling of this action as one for "declaration of the validity of an assignment" cannot make §261 a basis for federal jurisdiction over this contract suit.

Assuming the truth of what it wishes were true but is not, BSI presents a number of totally irrelevant, question-begging, and conflicting considerations: treaties allow foreign nationals to obtain, and assign, U.S. patent rights; 35 U.S.C. §102 refers to a "person" without specifying nationality; the Constitution does not specify nationality of "authors and inventors"; all U.S. citizens are affected by an "assignment" of an application; a state court cannot decide "a federal right created by federal statute"; Rasmussen and BSI's parent corporation are foreign entities; patents are grants of federal rights.

(3) Mootness

BSI contends in its main brief that, because of the substitution, diversity jurisdiction now exists and this appeal has thereby been rendered "moot" or "probably moot." BSI did not, however, move to withdraw the appeal. Rasmussen agreed that the appeal is moot in view of diversity. BSI's reply brief says only that the appeal is not procedurally frivolous for mootness because Rasmussen has not "agreed" to a remand.

[8,9] Beghin-Say assigned whatever rights it may have in the two U.S. applications to BSI after the district court entered the order appealed from in this case and BSI moved for substitution after this appeal was filed. Those actions cannot establish diversity jurisdiction in the district court under §1332(a)(2) when the complaint was filed. That determination must be made as of the filing date of a complaint, or of an amended complaint, and cannot be changed by action of a party thereafter. *Albert v. Keweenaw Corp.*, Nos. 83-720/781, 221 USPQ 202 (Fed. Cir. March 6, 1984). It is in any event a matter for decision by the district court in the first instance. The creation of diversity jurisdiction in BSI's Delaware suit, supra, note 3, if that occurred, could not work a retroactive creation of diversity jurisdiction in the Virginia court.

* Our grant of BSI's motion for substitution on appeal did not constitute such substitution before the district court. If BSI persists in its apparent desire to conduct two identical suits in two busy federal courts, it may file a new complaint in the Virginia court, whereupon one of the duplicative actions will, presumably, be stayed or transferred.

that issued the order here appealed from. Nor does substitution of BSI on appeal affect the sole issue before us, i.e., whether the Virginia district court erred in holding that it had no jurisdiction under §1338(a) over the action as filed. Nor would we have jurisdiction over an appeal from a final decision of a district court in a case in which that court's jurisdiction was based solely on diversity of citizenship.

As above indicated, we do have jurisdiction to decide our own jurisdiction and that of the district court on which our own depends. The appealed order was based on lack of jurisdiction over this type of suit under §1338(a). BSI questions the correctness of that order. Our decision disposes of that question and the appeal is not therefore moot.

(4) Costs

Rasmussen requests costs, attorney fees, and damages under Rule 38, Fed. R. App. P., asserting that this appeal is frivolous on its merits and in its procedural foundation and that it was filed for the sole purpose of unnecessarily and needlessly prolonging the ongoing conflict between the parties.

This court has noted that the filing of and proceeding with a clearly frivolous appeal constitutes an unnecessary and unjustifiable burden on overcrowded courts, diminishes the opportunity for careful contemplative consideration of non-frivolous appeals, and delays access to the courts of persons having truly deserving causes. *Asberry v. United States Postal Service*, 692 F.2d 1378, 215 USPQ 921 (Fed. Cir. 1982); *Connell v. Sears Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983). *Asberry* was called to counsel's attention when this appeal was filed.

There are, however, differences between excessive advocacy and inexperience on the one hand and clear frivolity on the other. True, it is difficult to conceive of any useful or non-frivolous purpose that could have reasonably motivated the continuation of this appeal, an appeal that does border the ragged edge of frivolity. First, BSI has a suit pending in Delaware, where it says diversity jurisdiction exists, and where a judgment on the merits may be obtained from which an appeal will lie to the United States Court of Appeals for the Third Circuit. Second, the result of a reversal here, if there had been a remote

chance of achieving it, would have been merely the pendency of BSI's two identical suits in two different federal district courts. Third, BSI continued to prosecute the appeal after the bankruptcy of its arguments had been pointed out in Rasmussen's brief.

Though a total absence of merit in BSI's arguments may, as Rasmussen suggests, be viewed as evidence of frivolousness, it may in this case also be viewed as the product of other factors, as indicated above. That consideration argues against Rasmussen's demand for all sanctions possible under Rule 38. Another sanction-limiting factor is an opportunity provided for guidance to the parties. BSI may now, for example, deem advisable the removal of §1338(a) as a claimed basis for jurisdiction in the district court for Delaware, and may also recognize that the sole basis for jurisdiction over this contract suit in any federal district court is diversity of citizenship.

We decline therefore to grant Rasmussen's request for a total sanction, including attorney fees and damages. We do order that BSI shall reimburse Rasmussen for his costs on this appeal.

Decision

Because no jurisdiction of the district court was here based on §1338(a), the appeal must be dismissed for lack of jurisdiction in this court.

Costs to Rasmussen.

Dismissed

Friedman, Circuit Judge, concurs in the result.

Court of Appeals, Federal Circuit

In re Gordon et al.

No. 83-1281

Decided May 10, 1984

PATENTS

1. Patentability — Anticipation — Modifying references (§31.217)

Question is not whether patentable distinction is created by viewing prior art apparatus

from one direction and claimed apparatus from another, but whether it would have been obvious from fair reading of prior art reference as whole to turn prior art apparatus upside down; mere fact that prior art could be modified by turning apparatus upside down does not make modification obvious unless prior art suggested desirability of modification.

Particular patents — Blood Filters

Gordon and Sutherland, Blood Filter Assembly, Rejection of claims 1-3 and 5-7 reversed.

Application for patent of Lucas S. Gordon and Karl M. Sutherland, Serial No. 124,312, filed Feb. 25, 1980. From decision rejecting claims 1-3 and 5-7, applicants appeal. Reversed.

James W. Geriak, Los Angeles, Calif. (Bradford J. Duff, Los Angeles, Calif., on the brief) for appellants.

John F. Pittelli (Joseph F. Nakamura and John W. Dewhurst, on the brief) for Patent and Trademark Office.

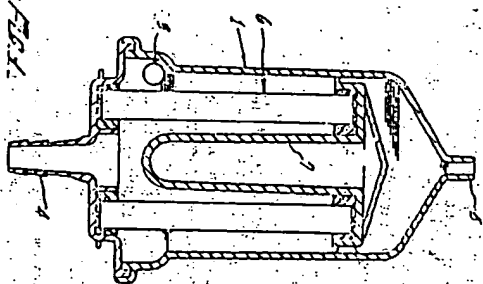
Before Benetti and Miller, Circuit Judges and Skelton, Senior Circuit Judge.

Miller, Circuit Judge.

This appeal is from the decision of the United States Patent and Trademark Office ("PTO") Board of Appeals ("board") affirming the examiner's rejection of appellants' claims 1-3 and 5-7 as unpatentable under 35 U.S.C. §103. We reverse.

The Invention

Appellants claim a "blood filter assembly" used during surgery and other medical procedures involving the handling of blood to remove clots, bone debris, tissue, or other foreign materials from blood before it is returned to a patient's body. Unlike blood filter assemblies widely used in the prior art, the device of the present invention permits both entry of the blood into, and ultimate discharge of the blood out of, the bottom end of the filter assembly, as shown below.¹



The blood filter assembly comprises a shell 1 provided with blood inlet 3 and blood outlet 4. Between the blood inlet and the blood outlet is filter medium 6 positioned within the filter medium core 7.

The location of blood inlet 3 is such that the incoming blood is directed along a spirally upward path by the inner wall of the shell. Further, the location of the blood inlet at the bottom end of the filter assembly facilitates the removal of gas bubbles by allowing them to rise upwardly out of the blood. The gas bubbles so removed are released from the blood filter assembly by means of a gas vent 5 located in the region of the top end of the assembly.

Independent claim 1, from which the other appealed claims depend, is illustrative:

Blood filter assembly comprising:

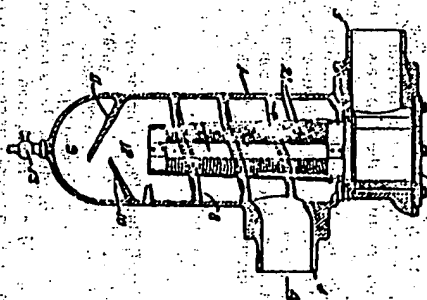
- a. a shell having a first top end and a second bottom end;
- b. a blood inlet located in the region of said bottom end and opening into said bottom end;
- c. a blood outlet located in the region of said bottom end;
- d. a gas vent located in the region of said top end; and
- e. a blood filter medium located between said blood inlet and said blood outlet,

said blood inlet being located and configured in a manner capable of directing incoming blood in a generally spiral path within said shell.

Claims 2, 3, and 5-7 further define the shape of the shell, the shape of the filter medium, and the nature of the material used as the filter medium.

Prior Art

The sole reference relied upon by the board is United States Patent No. 1,175,948, issued March 21, 1916, to French. French discloses a liquid strainer for removing dirt and water from gasoline and other light oils. As shown below, the inlet 4 and outlet 5 of the French device are both at the top end of the device.



A continuous helical tooth or thread 8 is formed integral with the inner wall of shell 1 and imparts to the incoming liquid a whirling motion, which gives the liquid a scouring action to help clean the surface of a metal screen filter 21 and guides unwanted dirt and water downwardly into a pocket 9 in the bottom of the shell. A pair of shelves 10 and 11, projecting inwardly and downwardly from the inner wall of the shell, further assists the entrance of dirt and water into the pocket 9 and prevents their being drawn back into the main chamber 12. The reference expressly states, "gravity assists in the separation of heavier oils or water." A pet-cock 13, projecting vertically downward from the bottom of the pocket, is used to remove the collected dirt and water periodically. The top of the liquid strainer is completely closed by gland 3, except for the inlet and outlet openings.

Board Opinion

The board held that the appealed claims were drawn to an apparatus which "would have at least been rendered prima facie obvious to one of ordinary skill in the art by the apparatus disclosed in French." The board's reasoning was that it would have been obvious to turn the French device upside down to have both the inlet and outlet at the bottom,

rather than at the top, and so employ French's "pet-cock" as the claimed "gas vent." In the board's opinion, no patentable distinction was created by viewing French's apparatus from one direction and the claimed apparatus from another.

ANALYSIS

[1] We are persuaded that the board erred in its conclusion of prima facie obviousness. The question is not whether a patentable distinction is created by viewing a prior art apparatus from one direction and a claimed apparatus from another, but, rather, whether it would have been obvious from a fair reading of the prior art reference as a whole to turn the prior art apparatus upside down. French teaches a liquid strainer which relies, at least in part, upon the assistance of gravity to separate undesired dirt and water from gasoline and other light oils. Therefore, it is not seen that French would have provided any motivation to one of ordinary skill in the art to employ the French apparatus in an upside down orientation. The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. See *Gart-Schenk, A.G. v. Norton Corp.*, 713 F.2d 782, 787, 218 USPQ 698, 702 (Fed. Cir. 1983), and *In re Sernaaker*, 702 F.2d 989, 993-96, 217 USPQ 1, 6-7 (Fed. Cir. 1983); both citing *In re Imperato*, 486 F.2d 585, 587, 179 USPQ 730, 732 (CCPA 1973).

Indeed, if the French apparatus were turned upside down, it would be rendered inoperable for its intended purpose. The gasoline to be filtered would be trapped in pocket 9, and the water French seeks to separate would flow freely out of the outlet 5. Further, unwanted dirt would build up in the space between the wall of shell 1 and screen 21, so that, in time, screen 21 would become clogged unless a drain valve, such as pet-cock 13, were re-introduced at the new "bottom" of the apparatus. See *In re Schuppen*, 390 F.2d 1009, 1013, 157 USPQ 52, 55 (CCPA 1968). In effect, French teaches away from the board's proposed modification.

Because the PTO has failed to establish a prima facie case of obviousness, the rejection of claims 1-3 and 5-7 as unpatentable under 35 U.S.C. §103 must be reversed.²

Reversed

¹ Because our holding that the PTO has failed to establish a prima facie case is dispositive, it is unnecessary to reach other arguments raised by appellants.